ABSTRACT

Title of dissertation: DEVELOPMENT OF A SCALE TO MEASURE ADOLESCENTS' DRUG USE RESISTANCE SELF-EFFICACY

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Drug use resistance self-efficacy (RSE) refers to one's beliefs about her or his capability to resist drug offers. Previous research suggests that RSE beliefs play an important role in preventing, delaying and curbing drug use among adolescents. Despite the potential impact of RSE beliefs on drug use, few carefully tested instruments are currently available to assess this construct among young adolescents. The purpose of this research was to develop and evaluate the underlying structure and initial psychometric properties of a newly developed instrument, the Drug Use Resistance Self-Efficacy (DURSE) scale.

Development and testing of the instrument occurred in four research phases: 1) a literature review; 2) expert review (n=10) and adolescent focus groups (n=15); 3) pilot testing of preliminary items (n=46); and 4) final scale administration (n=283) to examine main research questions (n=283). Exploratory factor analysis was used to test the factor structure of the DURSE scale and examine whether the DURSE scale captured aspects of

RSE beliefs that differed from existing measures. Initial psychometric properties of the DURSE scale were evaluated.

Factor analysis demonstrated that many of the DURSE items loaded on two drug-specific dimensions of RSE beliefs though justification for separate subscales was not warranted. DURSE items measured a unique construct when compared with related scales. Initial psychometric properties of the DURSE scale, including internal consistency reliability and construct validity, were satisfactory. As predicted, students who reported higher RSE beliefs reported significantly higher academic grades ($r = .147$, $p < .05$) and lower self-reported intentions to use drugs ($r = -.329$, $p < .01$). Higher RSE beliefs were negatively associated with reported family drug use ($r = -.060$) though the relationship was not significant. DURSE scores were significantly correlated with scores on the Social Desirability scale ($r = .197$, $p < .01$) indicating that students may have answered certain DURSE items in a socially desirable way.

The initial development of the DURSE instrument offers a promising first step in the scale development process. It is left to future research to refine the DURSE scale and establish its factor structure and psychometric properties in a larger, more representative sample.

DEVELOPMENT OF A SCALE TO MEASURE ADOLESCENTS' DRUG USE RESISTENCE SELF-EFFICACY

by

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CHAPTER I: INTRODUCTION

Introduction

Self-efficacy, an individual's judgment about her or his capabilities to perform or accomplish specific tasks, has been critical to understanding individual behavior and motivation (Bandura 1977, 1982, 1997, 2001; Pajares, 2002). Drug use resistance self-efficacy (RSE) pertains to one's beliefs about her or his capability to resist offers to use drugs. Self-efficacy, a core component of Bandura's (1982) Social Cognitive Theory, provides the theoretical foundation underlying RSE beliefs.

Over the past two decades, school-based efforts to prevent and delay initiation, as well as reduce drug use among adolescents have gained momentum. School-based drug prevention curricula are based on theoretical models of behavioral change. These theories posit that drug initiation and escalation of use can be delayed and decreased by targeting attitudes, perceptions, and behaviors related to drug use (Orlando, Ellickson, McCaffrey, Longshore, 2005). Recent evidence suggests that social influence programs are the most effective prevention approach (Cuijpers, 2002; Orlando et al., 2005; Tobler, 2000). RSE has been a focus of many social influence approaches to drug prevention based on theoretical notions that adolescents will be less likely to succumb to pressure to use drugs if they have the confidence and skills to resist (Bell, Ellickson, & Harrison, 1993; Bell & McGuigan, 1993; Botvin et al., 2001; Donaldson, Graham, & Hansen, 1994; Ellickson, Donaldson, Graham, Piccinin, & Hansen, 1995; Ellickson & Hays, 1990, 1992; Ellickson, McCaffrey, Ghosh-Dastidar, Longshore, 2003; Fearnow-Kenney, Hansen, McNeal, 2002; Musher-Eizenman, Holub, & Arnett, 2003; Oei & Burrow, 2000; Orlando

et al., 2005; Scheier, Botvin, Diaz, & Griffin, 1999) These programs aim to build and strengthen drug resistance skills among youth through a variety of methods, including participatory learning activities such as modeling, role playing, and practice of drug resistance skills (Orlando et al., 2005; Shin, 2001).

Despite potential influences of RSE beliefs and resistance skills on adolescent drug use, little effort has been directed toward in-depth development and testing of scales designed to measure this construct among adolescents (Substance Abuse and Mental Health Services Administration [SAMSHA],Centers for Substance Abuse and Prevention [CSAP], 2003). Existing scales used to measure RSE beliefs are limited in scope regarding drug types and in range of drug pressure situations (SAMSHA/CSAP, 2003). Even less attention has been directed toward younger adolescents who may be at increased risk of succumbing to social pressure to use drugs. A theory-based, psychometrically sound scale designed to measure drug use RSE among young adolescents should contribute to the understanding of this construct and its valid assessment.

Thus, the purpose of this study was to develop and evaluate initial psychometric properties of an instrument, the *Drug Use Resistance Self-Efficacy* (DURSE) scale, designed to measure drug use RSE among young adolescents. This study tested the factor structure of the DURSE scale in a convenience sample of 7th graders in the Montgomery County Public School System (MCPS) in Maryland, during the 2004-2005 school years. The final scale was tested for initial evidence of reliability and validity.

Statement of the Problem

Drug use, a term commonly used synonymously with substance use, refers to the use of alcohol, tobacco and other drugs. Drug use can include experimentation as well as regular use and abuse. The National Institute on Drug Abuse (NIDA) defines drug abuse as the use of illegal drugs or the inappropriate use of legal drugs as well as the repeated use of drugs to produce pleasure, to alleviate stress, or to alter or avoid reality" (National Institute on Drug Abuse [NIDA], 2003). According to this definition, adolescent experimentation, regular or problematic use of alcohol, tobacco or other drugs would be considered a form of abuse. NIDA has recommended that prevention programs address all forms of drug abuse including the underage use of legal drugs (e.g., tobacco or alcohol); the use of illegal drugs (e.g., marijuana or heroin); and the inappropriate use of legally obtained substances (e.g., inhalants), prescription medications, or over-the-counter drugs (NIDA, 2003).

Adolescent drug use is a major public health concern in the United States which is associated with a wide range of health and social problems including premature mortality and morbidity, unsafe sexual behavior, unintentional and intentional injuries, violence, and poor academic performance (Comerci & Schwebel, 2000; SAMSHA/CSAP, 1999; U.S. Department of Health and Human Services [DHHS], 2000; Donaldson et al., 1994; Greydanus & Patel, 2005; Vakalahi, 2000;). Despite the well-publicized health consequences of substance use, adolescents continue to use drugs at alarming rates. For example, nearly 2,200 young people begin smoking cigarettes everyday (Centers for Disease Control and Prevention [CDC], 2003), and nearly 80%, almost four out of every five students, have consumed alcohol by the end of high school (Johnston, O'Malley,

Bachman, 2004). Moreover, studies show that more than half of adolescents have tried an illicit drug by the time they finish high school (Johnston, et al., 2004). This situation raises serious public health concerns and calls for the development and implementation of effective, comprehensive prevention and treatment efforts (DHHS, 2000; Johnston, O'Malley, Bachman, Schulenberg, 2005).

Dramatic biological and psychological changes that occur during adolescent development increase the risk of succumbing to direct and indirect pressure to use drugs (SAMSHA/CSAP, 1999; Greydanus & Patel, 2005; Goldstein, Reagles, & Amann, 1990; Rhodes & Jason, 1995; Zapert, Snow & Tebes, 2002;). Adolescents typically feel the need to liberate from parents and establish an individual identity. Major developmental factors can put adolescents at risk for drug experimentation such including: 1) perceived sense of invulnerability and immortality; 2) limited coping strategies; and 3) perceived social or personal benefits of use that supersede negative consequences. Furthermore, the younger an individual is when he or she begins to use drugs the greater the risk for future substance related problems (Greydanus & Patel, 2005). It has been found that onset of use before age 15 is associated with greater risk for long-term dysfunctional patterns of drug abuse (Greydanus & Patel, 2005).

Existing substance prevention programs commonly focus on cognitions (i.e. thoughts/mental processes) such as normative beliefs, outcome expectations, behavioral intentions, and resistance self-efficacy. Past studies evaluating such programs indicate that development of refusal skills and self-efficacy beliefs influence adolescent short-term drug use behavior particularly among adolescents who have not experimented with drugs (Bell et al., 1993; Botvin, 1986; Donaldson et al., 1994; Donaldson et al., 1995;

Ellickson & Hays, 1990,1992; Ellickson, Bell, McGuigan, 1993; Ellickson et al., 2003; Fearnow-Kenney, et al., 2002; Musher-Eizenman et al., 2003; Oei & Burrow, 2000; Scheier et al., 1999).

While resistance education and training may potentially impact adolescents' RSE beliefs and subsequent drug use, few published studies have directly examined RSE measurement (Ellickson & Hays, 1990-91; Hays & Ellickson, 1990). Existing drug-specific RSE scales have been designed for use with adults (DiClemente, 1986; Young & Knight, 1989), and young children (Hansen, Graham, Wolkenstein, & Rohrbach, 1991), and the need for a self-efficacy scale appropriate for adolescents has been acknowledged (Hays & Ellickson, 1990; SAMSHA/CSAP, 2003). Some researchers report sound psychometric evidence for RSE measurement scales, yet weaknesses and gaps exist in content (situations and drugs included), format (Likert vs confidence rating of 0-100), and confounding effects ('desire to use' drugs with 'confidence to resist using' drugs). Variation in content, format and potential confounders call into question whether individual scales are measuring the same theoretical construct. Therefore, to fully appreciate the predictive and explanatory potential of RSE, rigorous analysis of the structure and psychometrics of a new RSE scale is warranted.

Rationale for Study

Tobacco use and alcohol/illicit drug use have been identified as two of the six behavior categories responsible for more than 70 percent of illness, disability, and death among adolescents and young adults (DHHS, 2000). While drug use among our Nation's adolescents remains an important public health issue, much progress has been made in

implementing school-based drug prevention programs and increasing knowledge of causes and correlates of adolescent drug use (Orlando et al., 2005; Botvin, 1996).

Drug prevention programs have been successful in preventing and reducing associated risk factors and actual substance use behavior among adolescents (Bell et al., 1993; Botvin, 1986; Botvin, Baker, Dusenbury, Botvin, & Diaz, 1995; Ellickson & Bell, 1990; Ellickson & Hays, 1992; Ellickson et al., 2003; Rhodes & Jason, 1995; Scheier et al., 1999; Shin, 2001). A number of drug prevention programs that teach adolescents how to resist or "say no" to pro-drug pressures are grounded in Bandura's Social Cognitive Theory (SCT) (1977). Conceivably, adolescents who learn how to resist will, therefore, be more likely to believe that they can resist in the future because of increased confidence to abstain from drug use. Hence, in terms of RSE, adolescents who report stronger RSE beliefs should, theoretically, be more likely to resist pro-drug pressures with more success than those who report lower perceptions of resistance self-efficacy.

Given the negative consequences associated with adolescent drug use, advancing the knowledge of the function of risk and protective cognitive factors, and ultimately, their short and long term effects is crucial. The RSE construct has become a leading target in prevention education programs and thus, its measurement should be of critical importance (Barkin, Smith, DuRant, 2002; Bell et al., 1993; Ellickson & Hays, 1991; Ellickson & Hays, 1992; Hays & Ellickson, 1990; Musher-Eizenman et al., 2003). Past studies that have measured adolescents' RSE beliefs as well as related constructs suggest that sound RSE scale development has been left largely unexplored, and available assessments of RSE beliefs may not adequately capture the full range of RSE beliefs

among adolescents (Barkin et al., 2002; SAMSHA/CSAP, 2003; Hays & Ellickson, 1990; Musher-Eizenman, 2003).

The DURSE scale should contribute to the prevention and evaluation knowledge base in several ways. First, considering the potential role of this construct in preventing and delaying the initiation of drug use among adolescents, a theory based, age appropriate, reliable and valid measurement tool should contribute to a greater understanding of how RSE influences or shapes behavioral beliefs.

Second, a comprehensive review of the literature has failed to identify any existing in-depth scale development efforts aimed at measuring RSE beliefs among adolescents (Hays & Ellickson, 1990; Musher-Eizen et al., 2003). A review of relevant studies examining RSE beliefs among early and late adolescents revealed that a number of assessments have been employed to measure RSE beliefs as well as refusal skills, but findings suggest major inconsistencies in terms of construct conceptualization, content, and assessment.

RSE beliefs have typically been assessed with a few items frequently using one item per type of drug and/or leaving out either cigarettes or marijuana. Furthermore, the same items have been used for younger and older adolescents (SAMSHA/CSAP 2003; Ellickson et al., 2003; Musher-Eizenman et al., 2003; Scheier et al., 1999;). While existing scales demonstrate adequate reliability, researchers have not examined the factor structure of these measures, and, hence, have potentially overlooked important aspects of this construct. The DURSE scale includes drug and context specific items to tap RSE regarding offers to use alcohol, cigarettes and marijuana among young adolescents.

Third, drug use prevention programs adolescents should be evaluated in a consistent manner. Thorough development and testing of a RSE instrument for young adolescents can help build strong, consistent assessment strategies useful in planning and evaluation of school based programs (Shin, 2001). A scientifically sound measure should enhance effective measurement of RSE beliefs and serve researchers and instructors in this field of study by determining change in this construct over time with and without intervention.

The DURSE (drug use resistance self-efficacy) instrument was developed with these issues in mind. This research involved a multi-step scale development effort designed to measure young adolescents' perceptions of RSE beliefs related to alcohol, cigarette, and marijuana offers in various social pressure situations; that is, situations involving an offer to use cigarettes, alcohol, and marijuana. Chapter Three provides an explanation of the systematic process that was used to develop the measurement tool.

Research Questions and Hypotheses

This scale development study assessed the factor structure, internal consistency, and validity of the Drug Use Resistance Self-efficacy (DURSE) scale. The research questions were as follows:

1. What is the underlying factor structure of drug use resistance self-efficacy (RSE) beliefs among young adolescents?

   1a. Do DURSE items represent a common underlying dimension or separable drug-specific dimensions of RSE beliefs among adolescents?

2. Are resistance self-efficacy beliefs related to measures of other constructs?

Hypothesis 2a. Higher levels of drug use resistance self-efficacy will be associated with higher reports of academic grades among adolescents.

Hypothesis 2b. Higher levels of drug use resistance self-efficacy will be associated with lower reports of intentions to use drugs among adolescents.

Hypothesis 2c. Higher levels of resistance self-efficacy will be associated with lower reports of family drug use among adolescents.

3. Are DURSE items significantly influenced by social desirability among young adolescents?

4. Does the DURSE instrument capture different aspects of resistance self-efficacy beliefs among young adolescents that differ from related measures of resistance self-efficacy?

Definition of Terms

- Self-efficacy: a conviction that one can successfully execute the behavior required to produce outcomes (Bandura, 1977).
- Resistance Self-efficacy: perception about one's own ability to resist prodrug pressures (Ellickson & Hays, 1990).

Additional Definitions of Related Constructs

- Self-efficacy to say "no": Items like "[would you] say 'no' when someone tries to get you to smoke marijuana?" (Barkin et al., 2002)
- Resistance skills: behavioral performance that refers to youths' ability to refuse offers of and temptations to use drugs (SAMSHA/CSAP, 2003)

  - Drinking refusal self-efficacy (DRSE): One's perceived ability to resist drinking in high-risk situations (Oei & Burrow, 2000).

- Drug Abuse: use of illegal drugs or the inappropriate use of legal drugs as well as the repeated use of drugs to produce pleasure, to alleviate stress, or to alter or avoid reality (NIDA, 2003).
- Early Adolescence: ages 10 to 14 (Balk, 1995); the period including the ages of 11-15 years, or the 6^{th}-10^{th} grades (DHHS, 2000).
- Measurement: A logical rule for assigning numbers to observations to represent the quantity of a trait of characteristic possessed (METRIC Online, 2004).

- Scale: An instrument that indicates the degree of a characteristic or trait in an ordered way (METRIC Online, 2004).
- School based drug prevention programs: school-based programs focusing on primary prevention of alcohol and/ or other drug use (Shin, 2001).
- Substance: alcohol, tobacco or other drug

Summary

Adolescent drug abuse rates raise a serious concern for the health of young people in the United States. Social influence approaches that focus on resistance behavior through RSE beliefs can positively impact drug use behavior among young adolescent. Reliable and valid measurement tools represent a crucial step in assessment and evaluation, however, a well-developed measurement scale designed to assess drug use RSE among

young adolescents was not revealed in a review of the published literature. The goal of the present study was to develop the DURSE instrument as a means of better understanding the role of RSE among young adolescents. Further, this scale may contribute to future measurement and intervention efforts.

Chapter II: Literature Review

Introduction

Chapter 2 provides a review of the literature relevant to: (1) Extent and significance of the adolescent substance use; (2) Determinants of adolescent substance use, (3) School-based substance use prevention programs; (4) Social cognitive theory which provides the theoretical foundation of RSE beliefs, (5) Influence of RSE on adolescent attitudes and behaviors; and (6) Measurement issues and practices.

Adolescent Substance Use

In its national public health agenda, Healthy People 2010, the U.S. Department of Health and Human Services (DHHS) strives to prevent and reduce drug use among young people to protect their health, safety, and quality of life. The Healthy People 2010 adolescent-targeted objectives presented below underscore the nation's priority of addressing substance use as a major public health concern (DHHS, 2000).

- Reduce the proportion of adolescents who report that they rode, during the previous 30 days, with a driver who had been drinking alcohol (26-6)
- Increase the age and proportion of adolescents who remain alcohol and drug free (26-9)
- Increase the proportion of adolescents not using alcohol or any illicit drugs during the past 30 days (26-10a)
- Reduce the proportion of adolescents reporting use of marijuana during the past 30 days (26-10b)

- Reduce the proportion of adolescents aged 12 to 17 engaging in binge drinking of alcoholic beverages (26-11d)
- Reduce initiation of tobacco use among children and adolescents (27-3)

Despite the highly publicized health consequences associated with adolescent drug use, these dangerous behaviors remain prevalent among today's youth. Drug use among adolescents is associated with a spectrum of compromising behaviors and harmful health outcomes, including: 1) high risk sexual activity resulting in sexually transmitted diseases and unplanned pregnancy; 2) poor academic performance; 3) drinking and driving or driving with someone under the influence of drugs leading to motor vehicle accidents; 4) poor cognitive functioning; 5) violence; and 6) other dysfunctional behaviors (DHHS, 2000; Donaldson et al., 1995; Hansen & Graham, 1991; NIDA, 2003; Vakalahi, 2000). Early age of onset and frequency of drug use have both been associated with violent and aggressive behavior, weapon-carrying, early initiation of sexual intercourse, suicide attempts, and poor academic achievement (Durant, Knight, Goodman, 1997; DuRant, Kahn, Beckford, Woods, 1997; DuRant, Krowchuk, Kreiter, Sinal, Woods, 1999; Woods et al., 1997; Wright & Fitzpatrick, 2004).

Adolescent substance use involves use of licit drugs including alcohol, cigarettes, and inhalants, as well as illicit drugs such as marijuana and cocaine. Alcohol, cigarettes and marijuana are the most widely used substances, in the US, and those that young people try first posing serious health threats to adolescents.

Evidence confirms a developmental progression of drug use in which individuals typically begin experimenting with certain substances before they use others (Botvin, 1986, 1996; Botvin et al., 1995; Botvin et al., 2001; Hansen & Graham, 1991; Greydanus

& Patel, 2005; Scheier, Botvin, Griffin, 2001; Zapert et al., 2002). For example, among marijuana users, most individuals begin by using tobacco and/or alcohol, and then proceed to marijuana (Botvin, 1986). Thus, these drugs are referred to as "gateway drugs" and represent a major focus of adolescent prevention programs (Ellickson et al., 2003; Musher-Eizenman et al., 2003). Use of "gateway" drugs can lead to polydrug use by middle to late adolescence (Greydanus & Patel, 2005). Past research has underscored the importance of targeting more than one gateway drug in preventing and deterring early initiation and subsequent drug use (Scheier et al., 2001).

Alcohol Use

Alcohol use remains a significant problem for adolescents and is widely used and accepted by society (DHHS, 2000; Greydanus & Patel, 2005; Johnston et al., 2005). The 2004 Monitoring the Future (MTF) survey data revealed that nearly three out of four (77%) students have consumed alcohol (more than a few sips) by the end of high school, and nearly half (44%) have consumed alcohol by the end of 8th grade. Twenty percent of 8th graders and 80% of 12th graders reported having been drunk at least once in their lifetime. Further, the percent of 8th, 10th, and 12th grade students who reported drinking an alcoholic beverage in the 30-day period before the survey were 19%, 35%, and 48% (Johnston et al., 2005).

Results from the 2001 Youth Risk Behavior Surveillance System (YRBSS) showed that that, among 9th graders, the national prevalence of lifetime alcohol use (had one or more drinks of alcohol on ≥1 day) and current use (one or more drinks of alcohol on ≥1 of the 30 days preceding the survey) were 65% and 36%, respectively. (Grunbaum

et al., 2004). In contrast, only 22% of these students reported current tobacco use, and 19% reported current marijuana use (Grunbaum et al., 2004). Alcohol has been linked with several unhealthy and deadly outcomes including homicide, injuries, motor vehicle accidents, violent behavior, and high-risk sexual behavior (Ellickson et al., 2003; DHHS, 2000; Greydanus & Patel, 2005).

Cigarette Use

Cigarette smoking remains a widespread public health problem and representing the greatest preventable cause of disease and mortality in the United States (Greynamus, 2005; Johnston et al., 2004). Every day, an estimated 3000 young persons start smoking (DHHS, 2000), and initiation of cigarette smoking occurs almost entirely before the age of 18 (DHHS, 2000). According to the CDC (2006), about 80% of daily ever smokers tried their first cigarette before they were 18 years old.

Despite increased rates of smoking in the early 1990s, recent adolescent smoking rates remain disturbingly high. Annual smoking rates for 8th, 10th, and 12th graders were approximately 11%, 19, and 27%, respectively (Johnston et al., 2004). Over half (53%) of American adolescents have tried cigarettes by 12th grade, and 25% of 12th graders were current smokers. Twenty-eight percent of 8th graders have tried smoking, and 10% had already become current smokers (Johnston et al., 2005). MTF (2004) showed that perceived risk of smoking tended to be higher among older students, and disapproval rates were higher in lower grade levels (Johnston et al., 2004), If current smoking rates remain, an estimated six million American adolescents will die prematurely from smoking-related diseases (CDC, 2006). If prevention efforts can

preclude adolescents from starting to smoke, their likelihood of smoking in adulthood, and developing and dying from a smoking-related disease would be dramatically decreased.

Marijuana Use

Marijuana has been the most widely used illicit drug since 1975 (Johnston et al., 2005). Adolescent marijuana use considerably increased in the 1990s and peaked in 1996 among 8th graders and in 1997 among 12th graders. Fortunately, modest declines in adolescent marijuana use have been reported since this time (Johnston et al., 2005; CDC, 2002). In 2004, approximately 40% of 12th graders, 30% of 10th graders, and 16% of 8th graders reported using marijuana in the last 12 months (Johnston et al., 2003). Nearly one million adolescents 16 to 18 years of age have reported driving in the past year at least once within two hours of using an illegal drug, most often after using marijuana. Adolescents who reported smoking marijuana were more than twice as likely to skip class, steal, attack other people, and destroy property as those who did not smoke (Johnston et al., 2003).

Other drugs

Although this review focuses on the most widely used substances (alcohol, cigarettes, marijuana) among adolescents (Johnston et al., 2005), the use of other drugs should be noted. MTF (2005) indicated that more than half (51%) of young people have tried an illegal drug by the time they finished high school and nearly 30% have used some illegal drug other than marijuana by the end of 12th grade (Johnston et al., 2005).

Results from the 2001 Youth Risk Behavior Surveillance System showed an increase in cocaine use (lifetime and current use) between 1991 and 2001 (Grunbaum et al., 2002).

Inhalants, a group of drugs consisting of volatile solvents, gases, and aerosols that are commonly found in household products, are of particular concern among young children and young adolescents (NIDA, 2004). Inhalants are legal, less expensive, and more readily available (Johnston et al., 2005), and hence, have been found to be more common among younger adolescents, with use tending to decline with age. Higher inhalant rates among younger adolescents differ from patterns of use observed for other drug types (Johnston et al., 2005; NIDA, 2004). These findings suggest that prevention efforts should concentrate on the determinants of use of alcohol, tobacco, and marijuana among adolescents, while a focus on the prevention of inhalant use may be more appropriate for younger elementary school children.

Determinants of Adolescent Substance Use

Important risk and protective factors related to drug use and have been well-established (Brown, Catalano, Fleming, Haggerty, & Abbott, 2005; SAMSHA/CSAP, 1999; NIDA, 2005). These factors include a wide range of familial, school, social, peer, and community influences that may vary across individual demographics such as age, gender, ethnicity, and psychosocial developmental factors (Brown et al., 2005; SAMSHA/CSAP, 1999; Donaldson et al., 1994; Johnston et al., 2003; Moon, Hecht, Jackson, & Spellers, 1999; NIDA, 2005; Vakalahi, 2001). Protective factors can counterbalance or mediate the effects of risks associated with adolescent substance use (Brown et al., 2005; SAMSHA/CSAP, 2003). Examples of protective factors include

social competence, effective problem solving skills, high parental monitoring and bonding, strong family bonding, no substance use in the family, high academic achievement, and community bonding. Such factors may protect youth from engaging in substance use by reducing the probability of drug initiation and increased drug use (Brown et al., 2005; SAMSHA/CSAP, 2003).

Several risk factors have been shown to increase the likelihood of youth substance use including factors such as academic failure, deviant peers, familial factors, favorable attitudes towards substance use, and broader community factors (Brown et al., 2005; SAMSHA/CSAP, 2003; NIDA, 2005). Individual traits such as antisocial and aggressive behavior, being male, and mental illness can place adolescents at risk for substance use and use (Greydanus & Patel, 2005; NIDA, 2005). Peer influence is a well-established risk factor for adolescent substance use (SAMSHA/CSAP, 1999; Bahr, Hoffmann, Yang, 2005; NIDA, 2005; Simons-Morton & Chen, 2005). In fact, the association with drug-using peers has been cited as one of the most important predictors of the onset of adolescent drug use (Donaldson et al., 1994).

Familial risk factors related to substance use include poor parental management strategies (i.e. discipline, problem-solving practices), patterns of parental criminology, and parental substance use (SAMSHA/CSAP, 1999; Ellickson & Hays, 1992; NIDA, 2005). School factors that may influence substance use are school failure, unsafe and chaotic environment, and low teacher expectations of students (SAMSHA/CSAP, 1999).

Broader societal and cultural factors also contribute to adolescent substance use (SAMSHA/CSAP 1999; Moon et al., 1999). For example, the impact of social cohesion, neighborhood problems, drug and alcohol purchase opportunity and availability on

adolescent substance use has been the subject of increasing research attention (Duncan, Duncan, & Stycker, 2002; James, Wagner, & Anthony, 2002).

Clearly, youth substance use is based on a complicated interaction of both risk and protective factors. Public efforts that aim to reduce risks and enhance protective factors can successfully prevent and reduce adolescent substance use (Botvin, 1996; Brown et al., 2005; SAMSHA/CSAP, 1999; DHHS, 2000; Goldstein et al., 1990; Rhodes & Jason, 1995; Vakalahi, 2001).

Adolescent Development

Age strongly influences initiation and progression of adolescent drug use (SAMSHA/CSAP, 1999; Greydanus & Patel, 2005). Individuals are the most susceptible to drug use beginning in early adolescence and extending through young adulthood (SAMSHA/CSAP, 1999).

Adolescence, the "bridge" between childhood and adulthood (Dusek, 1996; Manaster, 1989), is a time of dramatic biological, physiological, psychological, and social change (Greydanus & Patel, 2005; Manaster, 1989). Most experts agree that the period of adolescence extends roughly between ages 10 and 22. (Balk, 1995; Dusek, 1996; Goldstein, et al., 1990; Manaster, 1989). Balk (1995) classified three distinct periods of adolescence including early adolescence (ages 10 to 14); middle adolescence (ages 15 to 17); and late adolescence (ages 18 to 22). Early adolescence has also been defined as the period including the ages of 11-15 years, or the 6^{th}-10^{th} grades (DHHS, 2000). In the present study, early adolescence was classified by ages 11 through 15, or 6^{th} through 10^{th} grade.

During adolescence, individuals experience major life transitions (e.g. entrance into middle or high school) and begin to question authority, conform to perceived social norms, and develop a heightened concern with personal qualities such as appearance (Goldstein et al., 1990; Greydanus & Patel 2005). Adolescents often show increased perception of immortality and invulnerability which may help explain why they disregard warnings from authority about dangerous consequences of drug use and may misjudge the danger associated with various pressure situations (Schinke, Botvin, & Orlandi, 1991). Experimentation with drugs frequently occurs in early adolescence (Botvin, 1996; SAMSHA/CSAP, 1999; DHHS, 2000; Barkin, et al., 2002). Further, prior studies reveal a link between age of onset of drug use and subsequent substance-related problems. Hence, the younger an individual is when he or she begins to use drugs the greater his or her risk is for future substance related problems (SAMSHA/CSAP, 1999; DHHS, 2000) Greydanus & Patel, (2005) described, in their comprehensive review of adolescent drug abuse, that greatest risk for long-term problematic patterns of drug abuse is the onset of use before age 15.

During these years, individuals commonly experiment with a variety of life-style behaviors which represents part of the natural progression of becoming a healthy adult. While adolescence is characterized as a time of experimentation, drug experimentation can place youth at an increased risk for problematic drug abuse (Goldstein et a.l, 1990; Greydanus & Patel, 2005; Musher-Eizenman et al., 2003; Schinke et al., 1991.) The initiation of tobacco, alcohol, or other drugs can lead to compulsive patterns of use, dependence, and addiction that can last into adulthood or result in serious health consequences (Botvin, 1986; Greydanus & Patel, 2005).

Early adolescence, in particular, represents a significant time for experimentation with tobacco, alcohol, and other drugs (Botvin, 1996, 2003; Kim, McLeod, Shantiz, 1989; Musher-Eizenman et al., 2003), and thus, most drug prevention efforts have focused on middle school students (Botvin, 1996; Rhodes & Jason, 1995). The 7th grade has been the main grade of intervention in past research, although some programs have been implemented in elementary schools (Botvin, 1996, 2003; Dielman, Kloska, Leech, Schulenberg, & Shope, 1992; Kim et al., 1989; Rhodes & Jason, 1995). While some argue for earlier intervention (i.e. elementary schools), drug rates are commonly much lower at this age, and thus, program effects have been difficult to detect (Botvin, 1996).

Drug exposure and experience with drug use may differ across stages of adolescent development. Therefore, tailored intervention strategies, long-term prevention education, and age appropriate evaluation strategies remain critical in preventing and reducing adolescent substance use (SAMSHA/CSAP, 1999; Dielman et al., 1992; Ellickson & Hays, 1990-91; Musher-Eizen at al. 2003). For example, differences between younger and older adolescents related to motivation to use drugs, attitudes related to use, and perceived harm have been established (Musher-Eizen et al., 2003). For the purposes of this study, instrument development focused on 7th graders only. Continued work should be done to assess developmental appropriateness of the present scale among older adolescents and younger children.

School-Based Substance Use Prevention

The Healthy People 2010 (DHHS, 2000) report underscores the role of school-based health education in preventing and reducing a range of health problems, including

substance use. Objective 7.2 aims to "Increase the proportion of middle, junior high, and senior high schools that provide school health education to prevent health problems in areas including tobacco use and addiction, and alcohol and other drug use. (DHHS, 2000).

School-based prevention programs have been described as "programs focusing on primary prevention of alcohol and/ or other drug use" (Shin, 2001, p.140). Because elementary and secondary students account for a large proportion of the US population, the school setting serves as a structured implementation and testing site for reaching many adolescents with important health messages before they adopt unhealthy behaviors (Botvin, 1996; CDC, 2003; Shin, 2001). Further, many states require a form of tobacco, alcohol, and other drug education for students, either alone or as part of a larger health education curriculum (Botvin, 1996).

Published studies suggest that drug prevention efforts relying heavily on information dissemination, general communication, problem-solving skills, and affective education were typically unsuccessful (Bell et al., 1993; Botvin, 1986). For example, several studies suggested that affective education programs focused on improving self-esteem and responsible decision making were not successful in changing students' drug use behavior (Botvin, 1986, 1996). Additionally, simple drug education was only successful in increasing knowledge and was less effective in influencing attitudes and behaviors related to drug use (Botvin, 1986). Effective strategies for implementing drug prevention programs have been identified as targeting students in earlier grade levels; using comprehensive programs instead of "one shot" methods; including age-appropriate

"booster" programs (Kim et al., 1989); and highlighting social influences, life skills, and peer resistance skills (Shin, 2001).

Social Influence Prevention Approaches

The inadequacy of traditional prevention approaches led to the development of programs focused on psychosocial factors influencing substance use initiation (Botvin, 1986). Social influence programs, initially implemented in the context of an anti-smoking campaign, regard substance use as a social phenomenon (Botvin, 1986; Kim, 1989; Rhodes & Jason, 1995). This approach is grounded in the theory that resistance to drug use will be strengthened if an individual has developed an awareness of and appropriate skills that counter-act social pressures to use drugs (Donaldson et al., 1996; Ellickson & Hays, 1990-1; Sussman et al., 1993).

Two types of social influence, normative and informational, may facilitate drug use (Sussman et al., 1993). Normative social influence is "pressure applied by the peer group to make youth act in ways to achieve group acceptance" (Sussman et al., 1993, p. 1245). This type of influence is present when young people are confronted with offers to use drugs by influential individuals. Informational social influence, on the other hand, is "covert pressure (e.g. behavior, values and norms of others) make young people adopt social values favorable to drug use." (Sussman et al., 1992, p. 1245). Generally, social-influence programs are based on the premise that young adolescents may use drugs because they find it difficult to resist pro-drug influences (Orlando et al., 2005; Shin, 2001) and thus, these programs aim to build and strengthen drug resistance skills among youth through a variety of methods, including participatory learning activities such as

modeling, role playing, and practice of drug resistance skills (Orlando et al., 2005; Shin, 2001).

Numerous studies show that social influence approaches can have a positive impact on cognitive risk factors and actual drug use among young people (Bell, 1993; Botvin 1995; Ellickson & Hays, 1990-1; Ellickson et al., 1993; Ellickson et al., 2003; Kim, 1989; Musher-Eizenman et al., 2003; Orlando et al., 2005; Shin, 2001). Mediating variables including resistance skills, resistance self-efficacy beliefs, perceived use (beliefs about peer norms or normative beliefs), outcome expectancies, and pro-drug social influence have been given much attention in developing and assessing these types of programs (Ellickson & Hays, 1990-1; Ellickson & Hays, 1993; Hays & Ellickson, 1990; Musher-Eizenman et al., 2003). This evidence has provided justification for implementing prevention programs aimed at assisting young people to resist pro-drug pressures by teaching a gamut of resistance skills (Botvin, 1986; Ellickson & Hays, 1993; Shin, 2001).

Methods designed to strengthen RSE beliefs require teaching what is commonly referred to as "drug resistance skills" or "drug refusal skills." Botvin (1996) explained that "students are taught the requisite information and skills to recognize, avoid, or respond to high-risk situations in which they will have a high likelihood of experiencing peer pressure to use drugs" (p. 4). These skills include specific ways to refuse drugs in pressure situations as well as how to respond to media influences, specifically persuasive advertising (Botvin, 1996).

While substance use prevention programs incorporate various aspects of individual, social, and broader societal factors influencing adolescent behavior, the

purpose of the present study was to focus on resistance self-efficacy, a cognitive variable. Development of the DURSE instrument was intended to contribute to the measurement of RSE among adolescents, but will not take the place of or diminish the importance of focusing on other levels of risk and protective factors discussed above.

Theoretical Foundation of Resistance Self-efficacy

A belief is a cognitive expression of one's perception (Torabi & Jeng, 2001). Beliefs are determinants of behavior change along with other factors such as attitudes, subjective norms, and intentions (Fishbein & Ajzen, 1975; Torabi & Jeng, 2001). Resistance self-efficacy (RSE) beliefs about an individual's capability to resist drug offers have played an important role in social influence approaches to adolescent substance use prevention (Bell et al., 1993; Donaldson et al., 1994; Donaldson et al., 1995; Ellickson & Hays, 1990; Ellickson & Hays, 1992; Ellickson, 1993; Ellickson et al., 2003; Scheier et al., 1999; Oei & Burrow, 2000; Fearnow-Kenney, et al., 2002; Musher-Eizenman, 2003). To adequately address the assessment of this construct, an examination of its theoretical foundation is essential.

Social Cognitive Theory

Social Cognitive Theory (SCT) (Bandura, 1977; 1986) provided the theoretical framework for the development of the DURSE scale. Bandura's SCT (1977; 1986) is grounded in a construct known as reciprocal determinism. Based on this theoretical perspective, behavior is determined by the dynamic, constant triadic interaction of environmental, personal, and behavioral factors. Bandura (1986) posits that behavior is a

function of outcome expectations and efficacy expectations (Stretcher, DeVellis, Becker, & Rosenstock, 1986).

Self-efficacy, defined as "the conviction that one can successfully execute the behavior required to produce the outcomes," represents a key element of SCT (Bandura, 1977a, 1977b, 1982, 2001). Self-efficacy beliefs can determine whether an individual will attempt a behavior, and the capacity and length of time to which that effort will be made and maintained (Bandura, 1977b, 1982). Specifically, self-efficacy represents a context specific appraisal or judgment of an individual's competence to perform a given task or a range of tasks in a specific domain (Bandura, 1997). That is, self-efficacy relates to beliefs about personal capabilities of performing specific behaviors in specific situations (Stretcher et al., 1986). Bandura (1977) posited that perceived self-efficacy beliefs can influence various aspects of behavior including the adoption of new behaviors as well as inhibition of existing behaviors. Therefore, RSE may influence students who have never been exposed with drug offers and students who report past or current drug use or past drug offers.

Structure of Self-efficacy Beliefs

Self-efficacy beliefs, according to Bandura (1977, 1982, 2001), vary along dimensions of strength, magnitude, and generality. Strength is measured through probabilistic judgments of how certain ones ability is to perform a task. Self-efficacy, in terms of magnitude (level), according to Bandura (2001), involves assessing self-efficacy in terms of ordering tasks by difficulty level. Generality refers to the extent to which, if at all, self-efficacy beliefs vary across situations or types of activities (Stretcher et al., 1986; Bandura, 2001).

While self-efficacy has been conceptualized as a domain specific construct, and hence, involves beliefs about being able to perform specific behaviors in particular situations, perceived self-efficacy across different domains may be correlated (Bandura, 2001). In a recent unpublished report on constructing self-efficacy scales, Bandura noted that "When different spheres of activity are governed by similar subskills there is some interdomain relation in perceived efficacy" (Bandura, 2001, p. 1). Hence, if development of refusal skills and enhancement of efficacy beliefs related to one drug are similar and overlap with other drugs, drug-specific perceived self-efficacy beliefs may be correlated.

In this same report, Bandura (2001) posited that "Because efficacy strength incorporates efficacy level as well as gradations of certainty above any threshold value, efficacy strength is generally a more sensitive and informative measure than efficacy level." Thus, variations in strength of efficacy beliefs have proven predictive without measuring self-efficacy in terms of level (i.e. the number of activities individuals judge themselves capable of performing). The present RSE scale was designed to tap the strength (probabilistic judgment of how certain an individual is about the ability to perform a specific task) dimension of self-efficacy beliefs in refusing drug offers.

Studies suggest that substance specific (alcohol, cigarettes, marijuana) resistance skills may generalize to other drugs, and RSE may generalize across various situations (Hays & Ellickson, 1990; Ellickson & Hays, 1990-91; Musher-Eizenman et al., 2003). Accordingly, adolescents who believe they can resist pressure to smoke may also feel confident in their ability to resist alcohol use. Self-efficacy related to one specific behavior may also generalize across different situations (Hays & Ellickson, 1990). Hays

and Ellickson (1990) argued that if adolescents' self-efficacy beliefs generalize across substances, teaching them resistance skills for one drug may also have protective effects on resisting other drugs. Furthermore, if skills are not situation specific, resistance training may only need to cover a few scenarios, rather than the entire range of possible pressure situations.

The present study aimed to examine whether the structure of the DURSE scale consists of drug or situation specific factors rather than one underlying factor. Future research beyond the scope of the study is necessary to understand whether this construct generalizes across substances and pressure situations (Ellickson & Hays, 1990-1, Ellickson & Hays, 1992). If RSE generalizes across pressure situations and types of drugs, a RSE scale may not have to include the entire range of drugs and/or an exhaustive range of possible pressure situations.

The Influence of RSE on Adolescent Drug Attitudes and Behaviors

One major area of drug prevention research has focused on the role of RSE beliefs in preventing, delaying, and reducing substance use among youth. As noted earlier, the RSE beliefs as well as other factors have been shown to impact adolescent attitudes and behaviors related to substance use (Barkin, 2002; Bell et al., 1993; Botvin, 1986; Donaldson et al., 1994; Donaldson et al., 1995; Ellickson & Hays, 1990, 1992; Ellickson, 1993; Ellickson et al., 2003; Fearnow-Kenney, et al., 2002; Scheier et al., 1999; Musher-Eizenman et al., 2003; Oei & Burrow, 2000).

Long-term effects

Project ALERT is a leading drug prevention program designed for middle school students (published by the BEST Foundation For A Drug-Free Tomorrow). It has its theoretical basis in Bandura's social learning theory (Ellickson et al., 2003), specifically drawing from the self-efficacy construct. In an evaluation of Project ALERT among ninth graders, Bell and colleagues (1993) assessed program effects on RSE beliefs. Study participants, in this study, were divided into three risk levels (nonusers, experimenters, and users) for alcohol and cigarette use, and two risk groups (users and nonusers) for marijuana use, in order to determine program effects across different levels of baseline drug experience (Bell et al., 1993). Results indicated significant program effects for both high and low risk students and reduced occasional and regular cigarette use in experimenters (Bell et al., 1993), though these benefits did not continue through high school.

While programs led by teen leaders showed betters results for RSE, the effects on substance use decayed by ninth grade (Bell et al., 1993). Adolescent development may have led to diminishing effects because of inadequate long-term reinforcement of resistance skills, or a decline in the importance of resistance self-efficacy among older adolescents. Reinforcement of refusal skills may be crucial in high school, a time when older students may face more intense pressure to use drugs (Bell et al., 1993). Another long-term evaluation of Project ALERT among 7th and eighth graders showed diminished effects on cognitive risk factors, and no effects on drug use over a 6-year time span; thus, indicating the need for continued prevention efforts in high school (Ellickson et al, 1993).

Demographic Differences

Risk factors that contribute to adolescent drug use may operate differently across demographic characteristics and prior drug use experience (Bell et al., 1993; Ellickson & Hays, 1990-91; Ellickson et al., 1993; Fearnow-Kenney et al., 2002; Johnston et al., 2003; Musher-Eizenman et al., 2003). That is, drug type, age, gender, past experience with drug use, and pressure to use drugs may alter the degree of RSE among individuals (Ellickson & Hays, 1990-91; Ellickson & Hays, 1992; Musher-Eizenman, 2003).

Musher-Eizenman and colleagues (2003) documented differential effects of RSE and other attitudes across sex, age, and type of substance. Findings from this study suggested that RSE was a more important predictor of behavior for older adolescents than it was for the younger group (Musher-Eizenman et al., (2003). RSE was not related to substance use among younger adolescents, but these findings contradicted prior research (Bell et al., 1993). Further analysis of these findings suggested that younger adolescents displayed higher levels of RSE if fewer of their friends used substances. Conceivably, students in this age group who had fewer friends using drugs, and less experience with pressure to use drugs, may have overestimated their ability to refuse substance use. On the other hand, older adolescents who have experience with refusal situations might report more accurate estimates of their own RSE (Musher-Eizenman et al., 2003).

Scheier and colleagues (1999) examined the extent to which "refusal efficacy", among other variables (assertiveness, personal competence, and social skills), predicted alcohol involvement among eighth and tenth graders. Cross-sectionally, poor refusal efficacy was related to more risk-taking, lower grades, less competence, and more alcohol use. Longitudinally, however, poor refusal efficacy and risk-taking resulted in

increased alcohol use. Personal competence was considered a separate variable; that is, while personal competence was related to alcohol use in both grades, it did not predict future alcohol use (Scheier et al., 1999).

Additional research suggests differential effects of risk and protective factors, including RSE beliefs, across adolescents with different substance use experience (users and nonusers) (Ellickson & Hays, 1990-91). Ellickson & Hays (1990-91) showed that for non-drug users, low RSE led to increased future drug use. For users, RSE was not a useful predictor of drug use, but lower RSE was related to stronger expectations of future drug use and resulted in increased drug involvement (Ellickson & Hays, 1990-91).

Drug specific effects among participants were also examined in this study (Ellickson & Hays, 1990-91). For nonusers, adolescents with lower RSE were also more likely to expect to drink alcohol and to actually drink in the future. For drug users, significant relationships were found between RSE and marijuana offers, future expectations of alcohol use and smoking, as well as actual use (Ellickson & Hays, 1990-91).

Revisions were recently made to Project ALERT including a stronger emphasis on alcohol misuse as opposed to any use, new strategies to help confirmed smokers, and involvement of parents through home-learning opportunities. An evaluation of the new program showed positive effects for preventing occasional and more frequent drug use among diverse risk groups and across various school environments over 18 months, though specific effects of RSE were not reported (Ellickson et al., 2003). More recently, in a large scale evaluation of Project ALERT, Orlando et al., 2005 found that cigarette RSE was not correlated with cigarette use and alcohol RSE was significantly, but

moderately related to alcohol use across users and nonusers. This body of literature has significant implications for understanding the effect of age and drug experience on RSE, and for measuring this construct consistently among different adolescent populations.

Settings

The context of substance use behaviors have significant implications for understanding how adolescents experience drug offers and use, and for identifying possible contributing factors related to initiation and progression of these behaviors (Hussong, 2000). Despite the fact that common pressure situations and settings of drug use may inform the development of appropriate RSE assessments, research examining pressure situations, including different settings in which adolescents use alcohol and drugs, remains limited (Hussong, 2000).

Some research suggests age, gender and ethnic differences in substance use settings (Hussong, 2000; Mayer, Forster, Murray, & Wagener, 1998; Moon et al.,1999). Mayer and colleagues (1998) reported that across gender, younger adolescents were still more likely to use alcohol in their homes than in other homes or in open fields. Moon and colleagues (1999) noted ethnic and gender differences in drug use and refusal of drug offers. For example, Mexican American adolescents were more likely to receive drug offers from family members, while African Americans were more likely to receive drug offers from dating partners and parents. Both males and females were more likely to receive offers from others of the same gender, but females were more likely to receive offers from dating partners than their male counterparts (Moon et al., 1999).

Hussong (2000) found that female adolescent alcohol users were more likely than males to report alcohol use at family parties and, to some extent, in their own homes.

With respect to other drug use, again female adolescent drug users were somewhat more likely to use illicit drugs at social parties (Hussong, 2000). Clearly, in order to assess accurate RSE perceptions, an appropriate scale should include the range of realistic situations in which adolescents can identify as possible circumstances that they may feel pressure to use drugs.

Adolescent differences in substance use behavior across age, gender, and ethnicity require careful consideration when assessing RSE. In addition, settings of drug use and pressure situations serve as important factors in assessment and intervention. There is a clear need for prevention programs as well as measurement tools tailored to specific adolescent populations based on age, gender, and ethnicity. Measurement scales developed and tested on one subgroup of adolescents may not necessarily be appropriate for other groups (Ellickson & Hays, 1990-91; Hussong, 2000; Mayer et al., 1998; Moon et al., 1999; Musher-Eizenman, 2003).

Measuring Resistance Self-efficacy

Measurement scales are "collections of items combined into a composite score, and intended to reveal levels of theoretical variables not readily observable by direct means" (DeVellis, 2003, p.8). Scales can be suitable assessments of unobservable latent variables (DeVellis, 2003). Thus, the DURSE instrument was designed to serve as an appropriate type of measurement of RSE.

Measuring hard to define and intangible concepts poses a clear challenge to social science researchers (DeVellis, 2003). Researchers often measure theory-based constructs by asking a few questions, or by modifying scales used in previous studies (Ajzen, 2002).

Ajzen (2002) states: "Although this approach often yields findings of interest, it can produce measures with relatively low reliabilities and lead to an underestimate of the relations among the theory's constructs and of its predictive validity" (p.4). Reliable measures require attention to appropriate item selection based on behaviors of interest and research populations in the early stages of investigation (Ajzen, 2002; Owen & Froman, 2003).

Poor measurement of theoretical constructs is associated with several risks (DeVellis, 2003). A measure that inaccurately assesses what it is intended to measure can result in faulty conclusions, and therefore, poor or inaccurate assessment of program effectiveness. While rigorously tested and validated measures may not always be available or feasible for researchers, adequate measurement scales involve a crucial step in conducting valid research. Further, psychometric properties of scales used to measure theoretical constructs should be considered when reaching and reporting study findings and conclusions (DeVellis, 2003).

Existing Measures

As discussed, RSE beliefs have been shown to impact adolescent drug use, and school-based prevention programs provide a useful means by which adolescents can develop these beliefs. An examination of evaluation research, however, suggested that several different measures have been used to assess RSE beliefs, resistance skills and other related constructs.

Prevention researchers have typically assessed RSE by asking students to provide judgments of whether they would be capable of successfully resisting drug use in various pressure situations. Students provided these judgments on a traditional Likert-type

measurement rating scale that ranges from strongly agree to strongly disagree, or very hard to not hard at all (Hays & Ellickson, 1990; Ellickson & Hays, 1991; Ellickson & Hays, 1992; Musher-Eizenman et al., 2003).

In his *Guide for Constructing Self-Efficacy Scales* (2001), Bandura emphasized that self-efficacy items should be concerned with capability and phrased in terms of *can do* as opposed to *will do*. While perceived self-efficacy is a major determinant of intention, the two variables are conceptually separate (Bandura, 2001; Ajzen, 2002). Assessing an estimate of confidence for behaviors that were physically within reason may be measuring willingness or behavioral intent to perform the behavior, not self-efficacy (Kirsh, 1982; Kirsch, 1985). Further, Bandura (1997) differentiates between self-efficacy and confidence by stating: "confidence is a nondescript term that refers to strength or belief but does not necessarily specificy what the certaintly is about" (Bandura, 1997, pg. 382).

The Center for Substance Abuse Prevention (SAMSHA/CSAP), created by the Anti-Drug Abuse Act of 1986, concentrates on the U.S. Department of Health and Human Services' efforts to prevent alcohol, tobacco, and other drug problems nationwide. CSAP is charged with supporting national, regional, state, and community prevention efforts focusing on the behaviors and attitudes of young people regarding alcohol, tobacco, and other drugs (SAMSHA/CSAP, 1993).

In 1998, CSAP launched its Core Measures Initiative (CMI); this effort involved a consensus building process among nationally-recognized researchers making up five Task Forces to apply their existing expert knowledge in developing a core guide of evaluation measures within five areas of prevention-related behavior including the

following: 1) Alcohol, Tobacco, and Other Drug Use (ATOD), 2) Individual/Peer Factors, 3) Family Factors, 4) School Factors; and Community Factors. This group of measures have been developed to meet three CSAP goals including: 1) To increase accountability for monitoring progress; 2) To promote more consistent use of scientifically-based program measures; and 3) To improve accessibility of common data to cross-site evaluations (SAMSHA/CSAP, 1999).

The "CMI Phase I: Recommendations" classifies Resistance Skills as an Individual/Peer Factor. As of July 2003, a measure of resistance skills was not identified in this report, and work in this area was termed "in-progress." More recently (2003), updated information was provided on the Core Measures Initiative Recommendations for measuring Resistance Skills (B. Fallik, personal communication, 2003).

According to an unpublished CSAP report (2003), resistance skills concern "youth's ability to refuse offers of and temptations to use drugs…as opposed to a general skill, drug resistance skills specifically target drug-related events" (p.1). The four-item Drug Refusal Skill Scale (Wake Forest University) has been recommended by CSAP's Task Force of experts, though this scale is still in the process of being entered into the CMI database of prevention-related evaluation measures (SAMSHA/CSAP, 2003). CSAP's Core Measures Initiative Project (2003) stated that resistance skills/RSE instruments could not be endorsed if scale items did not specify that the respondent did not want to accept the offer as a prior condition of refusal. This reduced the possibility of potentially confounding desire or willingness to try or use drugs with the likelihood of refusing the offer to use or try drugs (SAMSHA/CSAP, 2003).

The Drug Refusal Skill (DRS) Scale (Wake Forest University) measures a respondents' perceptions of self-efficacy as well as their likelihood of refusing a drug. It specifically assesses perceived ability to refuse offers to use drugs from friends. The instrument has been used in the Effective School-based Prevention Project (SAMSHA/CSAP, 2003). DRSS includes four items, 2 related to alcohol, and 2 related to marijuana (i.e. *Pretend your best friend offered you marijuana and you did not want it. How hard would it be to refuse the offer?*). There are four response options which range from "very easy" to "very hard". The instrument does not include an item related to cigarette smoking and all items involve an offer from a "best friend." This instrument seems limited in terms of measuring RSE across various situations and across all three gateway drugs. Reliability of the instrument was adequate (coefficient alpha = .80). The instrument has been tested on White, African American, Hispanic, middle school, junior high school, and high school students (Hansen et al., 1997).

The CSAP task force conceptualized "Resistance Skills" as a multi-dimensional construct composed of equal parts of willingness (want to resist), ability (can resist), and fortitude (strength) to refuse drug offers. Since the Wake Forest instrument specified the conditions of refusal and tapped into all three aspects of this construct, the task force recommended this scale for inclusion in the CMI as the instrument that measures the construct better than any other scales examined to date (SAMSHA/CSAP, 2003). The task force stated that "by specifying the conditions under which the refusal is occurring (i.e. best friend offering, you don't want it), this instrument taps the construct of resistance skills better than other instruments identified by either the original task force of the current effort" (SAMSHA/CSAP, 2003).

A combination of scales to measure RSE constructs were identified in the literature. While psychometric properties of these scales have been reported, most of these measurement scales have not been subjected to in-depth psychometric testing across different populations. Table 1 lists several past studies and corresponding measures of RSE and related variables. Measures of RSE beliefs commonly include a few questions on students' cognitions (i.e. perceived competence, ability, willingness, and perceived difficulty) in resisting various drugs. An examination of past studies, however, indicates that scales designed to measure RSE beliefs were often theoretically weak, inconsistent and/or overly general.

Research Using Existing Scales

Existing measurement scales often conceptualize RSE differently and assess only certain types of drug offers in a limited number of contexts (Bell et al., 1993; SAMSHA/CSAP, 2003). Further, age appropriate measures of RSE beliefs have not been adequately developed or tested. For example, Bell and colleagues (1993) measured beliefs about drug resistance self-efficacy in two situations, on a date and at a party. Questions used to measure RSE asked whether the student would use drugs when offered a substance on a date or at a party. The date questions included the condition (on a date or at party) the precondition (and you did not want it). Therefore, according to the authors, "these questions may be purer measures of RSE, while the party questions may more closely reflect likely behavior" (Bell et al., 1993)

Table 1.1 Existing Measures Designed to Assess Resistance Self-efficacy and Related Constructs

Author	Scale	Study Population	Target Drug	Description of Scale Items
Barkin et al. 2002	"Self-efficacy to say no" scale	7th graders	Tobacco, alcohol or other drugs	5 items: Would say no when someone tried to get them to use a drug?
Bell et al., 1993	Resistance Self-efficacy	9th graders	Alcohol, Cigarettes, Marijuana	4 items: on a date and at a party (date questions controlled for condition but party did not)
Botvin SAMSHA/CSAP, 2003	Refusal Skills (probability of actual refusal)	Middle, junior, and high school students	Cigarettes, alcohol, marijuana or other drugs	5 item: If someone asked you to smoke, drink, use marijuana or other drugs would you tell them "no" or "no thanks"; "not now", "change the subject", etc. (Definitely would-Probably would)
Botvin SAMSHA/CSAP, 2003	Refusal Skills (ability to refuse)	Middle, junior, and high school students	Cigarettes, Alcohol, Marijuana, Cocaine, Inhalants	5 items: Would you be able to say "no" when someone tries to get you to smoke a cigarette/use alcohol/ etc. (Definitely would-definitely would not)
Colleti, Supnik, & Payne, 1985	SSEQ - Smoking Self-Efficacy Questionnaire	Adults in clinical setting	Cigarettes	Urge to smoke in a situation described could be resisted by writing yes or no in Can Do column; no scored as confidence rating of zero, yes, then confidence to resist was rated in Confidence column on a scale ranging from 10 to 100 (measured strength of confidence) (Mean range confidence score 0-100)
Ellickson & Hays 1990-91	Resistance Self-efficacy	8th graders	Alcohol, Cigarettes, Marijuana	2 items: 3 substance specific scales, One assessed the adolescent's perceived ability to resist alcohol (cigarettes, marijuana) at a party; the other assessed RSE when on a date
Hansen et al., 1991	Not provided	5th graders	Alcohol	Perceptions about how hard it would be to resist an offer to drink alcohol in various situations
Hansen et al., 1997 (Wake Forest)	Drug Refusal Skill Scale*	Middle school/junior high school students White, African American, and Hispanic students	Alcohol, Marijuana	4 items: 2 marijuana, 2 alcohol (control for condition (Pretend best friend asking, you don't want it) How hard would it be to refuse the offer? (very hard – very easy)
Musher-Eizen et al. 2003	Resistance Self-efficacy Scale	Young (12-15) Older (18-22) Adolescents	Alcohol, Cigarettes, Marijuana	4 items: modeled after Ellickson et al. (2 items assessed feelings that they could resist alcohol, one item on cigarettes, one item on marijuana
Oei & Burrow 2000	Drinking refusal Self-efficacy	Adults	Alcohol	3 factor, 31 item measure of drinking related self-efficacy. Three factors are drinking in situations characterized by social pressure, opportunistic drinking, and emotional relief.
Scheier et al. 1999	Refusal Skills	7th, 8th, and 10th graders	Cigarettes, Alcohol	Refusal skills were assessed using 3-items (i.e. refusing a cigarette offer by a friend" Responses: not at all confident to very confident; "Say no when someone tries to get you to smoke" (never to almost always)
Young & Knight, 1989	Drinking Refusal Self-efficacy Questionnaire (DRSEQ)	Adults	Alcohol	31 items, 3 subscales (drinking in social pressure situations, opportunistic drinking, emotional relief)

*Recently adopted by SAMSHA/CSAP's Core Measures Initiative

Scheier and colleagues (1999) operationalized self-efficacy as a perception of competence, and social competence as the ability and motivation to navigate challenging interpersonal situations. In this study, assessment of refusal skills was obtained through 3 items on cigarettes and alcohol that were not situation specific. Findings confirmed that early adolescents who lacked refusal skills (refusal efficacy) were more likely to use alcohol; moreover, this effect continued into later adolescence. Personal competence was measured as a separate construct in (Scheier et al., (1999).

In a more recent study, Barkin and colleagues (2002) studied social skills and attitudes associated with substance use behaviors among 7th grade students to evaluate a prevention program (Life Skills Training curriculum). For this study, the researchers used the "Self-Efficacy To Say No" scale adapted from previous research. This scale includes five questions asking students whether they would say no when someone tried to get them to use a drug. Response categories ranged from "definitely would say no" to "definitely would not say "no" (Barkin et al., 2002). These questions did not tap into situational aspects of using drugs. Study findings suggested that self-efficacy to say "no" was a useful predictor of both current and anticipated drug use (Barkin, 2002).

In another study, Fearnow-Kenney et al. (2002), using a 5-year longitudinal study of sixth through twelfth graders, examined the effectiveness of twelve mediating factors in determining substance use. Structural equation modeling revealed that the factor termed "Drug Attitudes" (including 4 subscales: beliefs about consequences, normative beliefs, lifestyle incongruence, and commitment) was the only variable that led to reduction in future use of alcohol, cigarettes, and marijuana. One of the mediating variables, resistance skills, was operationalized as students' perceived ability to identify

and resist pressure to use alcohol and marijuana (alpha = .79). The variable labeled "resistance skills" in this study was assessed through four items, but details on the scale were not provided (Fearnow-Kennet et al., 2002).

Past studies have used drug specific measures of RSE beliefs (Baldwin, Oei, Young, 1993; Ellickson & Hays, 1992; Lee & Oei, 1993; Oei & Burrow, 2000; Young & Knight, 1989; Young et al., 1991). For example, Oei & Burrow (2000) found that drinking refusal self-efficacy was related to quantity of alcohol consumption (Oei & Burrow, 2000). Some studies indicated that drinking refusal self-efficacy impacted alcohol-related behavior, more so than alcohol expectancy (Baldwin et al., 1993; Lee & Oei, 1993). Additional research suggests that drinking refusal self-efficacy together with alcohol expectancy significantly effects drinking initiation and maintenance (Christiansen, Smith, & Roehling, 1989), and the recovery from alcohol abuse (Solomon & Annis, 1990). A review of the published literature did not reveal scales designed to measure smoking or marijuana specific RSE beliefs among young or older adolescents.

Finally, a few past studies have used behavioral evaluations to assess refusal skills (Donaldson et al., 1994; Donaldson et al., 1995; Donohue, Van Hasselt, Hersen & Perrin, 1999; Shope, Copeland, Maharg, Dielman, & Butchart, 1993). For example, Shope and colleagues (1993) assessed adolescents' skills to refuse an offer to drink alcohol using a self-report questionnaire and objective rating system. In addition, refusal skill role plays were evaluated by trained raters. Likewise, Donohue and colleagues (1999) assessed substance refusal skills by rating a role play that included four interpersonal scenarios among conduct-disordered adolescents.

In summary, the use of different instruments to assess RSE beliefs raises concerns regarding the accuracy and adequacy of measurement and interpretation of findings. A well-developed instrument could contribute to the understanding and utility of DURSE and promote consistent use of a psychometrically sound measure of this construct.

DURSE Instrument

It is well-established that appropriate operationalization and measurement of theoretical concepts depend on conceptual clarity (Bandura, 2001). Drug use resistance self-efficacy, for the present study, concerns one's perceived ability to successfully resist offers to use cigarettes, alcohol and marijuana in different pressure situations. While many similar definitions exist for general resistance self-efficacy measures and drug specific measures, the DURSE definition is consistent with Bandura's (1977; 1982) theoretical framework and concept of general self-efficacy (Ellickson & Hays, 1990-91; Hays & Ellickson, 1990; Musher-Eizenman, 2003; Stretcher, et al., 1986).

The scale was developed for young adolescents, specifically 7th grade middle school students. This age group is vulnerable to experimentation with cigarettes, alcohol, and other drugs (Botvin, 1996). Since developmental influences on substance use have been identified in the literature (Greydanus & Patel, 2005; Johnston et al., 2003) future research beyond the scope of this project would require examination of differences by age and personal history when applying the DURSE scale. Initial items were generated based on a review of the literature that identified background information and existing scales that measure RSE or related constructs.

The format for the RSE scale was a summated Likert-type rating scale. A summated rating scale is a set of items approximately equal in attitude value, to which

subjects respond in terms of degree of agreement or disagreement (DeVellis, 2003). Four characteristics that constitute a summated rating scale include the following: (1) multiple items that are combined or summed, (2) individual items that measure a quantitative property of something, (3) items have no "right" answer, excluding tests of knowledge or ability, and (4) every item is a statement, and respondents are asked to give ratings about each statement (Spector, 1992).

While this operationalization of RSE is similar to other definitions of the construct, the DURSE scale is distinct for the following reasons: 1) scale items controlled for desire by setting a condition which has been a problem with prior scales; 2) items ask individuals about their judgments of capability in terms of "now" rather than their expected "future" capabilities because Bandura (2001) argues that people may find it easier to be efficacious when asked about a hypothetical future and thus, overestimate their self-efficacy; 3) items covered a sufficient range of realistic pressure situations to enhance content validity; 4) scale content, wording, and response format were developed systematically and rigorously tested utilizing an expert panel and pilot iterations; and 5) the final factor structure of the scale was tested to determine the usefulness and reliability of a multidimensional measure of RSE beliefs consisting of three drug-specific subscales.

Process of Scale Development

Basic principles of scale development have been summarized by Clark & Watson (1995) based on a review of published scale development articles. These authors suggest that the process of scale development should include the following steps: 1) conceptualization and development of an initial item pool; 2) item selection and

psychometric evaluation, and 3) the ongoing process of external validity. An adaptation of the procedures and guidelines for scale construction obtained from four sources of published literature guided the multi-step scale development procedures for initial development and psychometric testing of the DURSE scale used in this study (Clark & Watson, 1995; DeVellis, 2003; Spector, 1992; Torabi & Jeng, 2001). Development procedures used in the present study included four phases that are described in detail in Chapter Three. Future refinement stages will be required to establish the external validity of the DURSE scale.

Conclusion

While past studies have examined the utility of RSE beliefs in preventing and reducing adolescent substance use, research on the development and validation of a RSE scale has not received adequate attention. This project developed the DURSE instrument, a carefully tested measurement scale designed to measure RSE beliefs among young adolescents. This study may have important implications for future assessment of RSE beliefs among this population. In future studies, this measurement tool may be used to assess changes in RSE beliefs, a key target of school-based drug prevention programs, and subsequently solidify the role of RSE beliefs in determining adolescent substance use behavior.

CHAPTER III: METHODS

Introduction

The aim of this study was to develop a reliable and valid instrument designed to measure drug use resistance self-efficacy among young adolescents. Chapter Three describes the methodology that was used to develop the Drug Use Resistance Self-Efficacy (DURSE) scale in four phases. Phase One (July – September 2004) included concept clarification, description of the intended population, and an explication of the preliminary table of specifications for initial item generation. Phase Two (October 2004 – February 2005) included completion of item generation and revisions based upon an expert review and focus groups. Phases Three (May 2005) and Four (September 2006) included the pilot testing and final administration for assessment of psychometrics, respectively.

Research Questions

This scale development study assessed the factor structure, internal consistency, and validity of the DURSE scale. The research questions were as follows:

1. What is the underlying factor structure of drug use resistance self-efficacy (RSE) beliefs among young adolescents?

   1a. Do DURSE items represent a common underlying dimension or separable drug-specific dimensions of RSE beliefs among adolescents?

2. Are resistance self-efficacy beliefs related to measures of other constructs?

Hypothesis 2a. Higher levels of drug use resistance self-efficacy will be associated with higher reports of academic grades among adolescents.

Hypothesis 2b. Higher levels of drug use resistance self-efficacy will be associated with lower reports of intentions to use drugs among adolescents.

Hypothesis 2c. Higher levels of resistance self-efficacy will be associated with lower reports of family drug use among adolescents.

3. Are DURSE items significantly influenced by social desirability among young adolescents?
4. Does the DURSE instrument capture aspects of resistance self-efficacy beliefs among young adolescents that differ from related measures of resistance self-efficacy?

Study Design

Overview

This study was implemented in four phases. The study design included qualitative and quantitative methodology. Qualitative data collected through focus groups and expert review were used in item generation and scale revision. Quantitative data were collected during the pilot and the final scale administration and were used to answer the main research questions.

Phase One was conceptual and included concept clarification, description of the intended population, and development of a table of specifications for initial item generation. Phase Two included completion of item revisions based upon expert panel

review and student focus groups. Phases Three and Four included pilot testing of the preliminary scale and final psychometric testing of the DURSE instrument, respectively.

Concept Clarification

The process of concept clarification and item development began with a review of existing literature to obtain background information on RSE and resistance skills related to drug use and to locate instruments designed to measure these types of constructs. Relevant literature was identified through a search of key terms and combinations of these terms (such *as resistance self-efficacy*, *self-efficacy scales/measurement*, *drug use self-efficacy*, *resistance skills*, *adolescents*, *refusal efficacy*, *drug pressure/situation*) using online databases. Published articles and other reports were considered relevant if they described resistance self-efficacy and related constructs associated with adolescents, drug use/pressure, and/or drug prevention. The initial set of literature was reviewed and used to establish further search terms and related literature.

A description of DURSE and an initial list of items were generated based on definitions of self-efficacy found in the literature as well as existing scales used to measure related constructs. Self-efficacy, in general, refers to "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Pajaras, 2002). This definition was used as the basis for the description of DURSE. DURSE was defined as "an individual's judgment of his/her capability to resist offers to use cigarettes, alcohol and marijuana in different pressure situations".

A Table of Specification was developed that divided the overall DURSE concept into drug and situation dimensions based on the theoretical foundation of self-efficacy.

This table provided a matrix for the structure of the DURSE items. Thus, each item would include a different drug (alcohol, cigarette, marijuana) component as well as a situation component.

Qualitative and Quantitative Methods

Phases Two through Four involved research with study participants. Phase Two activities consisted of an expert panel (n=10) review and two focus groups (n=12). During phase Three, a convenience sample of 7th grade students (n=60) in two health education classes was invited to participate in the pilot test of the initial DURSE instrument. Forty-six students who returned parental permission forms and signed assent forms participated in this phase of the study. During Phase Four, 7th grade students (n=344) in 11 health education classes were invited to participate in a cross-sectional study. Two hundred eighty-three students who returned signed parental permission forms and signed assent forms (see Human Subjects) participated in the final scale administration.

Study Population

The study population included 7th grade students in the Montgomery County Public School (MCPS) system. The lead researcher worked with the MCPS Coordinator of Health Education on a previous evaluation of the existing drug prevention program used in MCPS middle schools. Montgomery County, Maryland has 36 middle schools with approximately 29,232 students. Recent demographic information indicates that in 2003-2004, approximately 10,716 7th graders attended MCPS middle schools. Of these students, 49% were female and 51% were male. Racial/ethnic composition of 7th graders

included African American (23%), Asian (14%), American Indian (0.3%), Hispanic (19%), and White (44%) students. Approximately 38% of the students were currently receiving free and reduced meals or had received them in the past (FARMS) (Montgomery County Public School [MCPS], 2005).

The Maryland Adolescent Survey (MAS) (2004) assesses alcohol, tobacco and other drug (ATOD) use among adolescents in the State. This survey is administered every two years to a sample of sixth, eighth, tenth, and twelfth graders in every Maryland public school system. While MAS data indicates long-term improvement in adolescent drug use over the last decade, this issue remains an important public health concern. According to 2004 MAS data, State adolescent substance use rates were consistent with national rates. Recent (2004) findings, however, showed an increase in the use of alcohol, cigarettes, marijuana and inhalants among sixth graders since 2002 (Maryland Adolescent Survey [MAS], 2004).

Overall, cigarettes, alcohol and marijuana use increased with age. For example, percent of reported ever use increased by grade level (6^{th}, 8^{th}, 10^{th}, 12^{th}) for cigarettes (5.5, 15.9, 26.1, 38.6), beer/wine (11.9, 29.5, 47.9, 64.5), liquor (5.4, 19.1, 43.2, 61.0), and marijuana (1.9, 11.7, 28.2, 43.0). Montgomery County data shows that percent of reported ever use of cigarettes (2.6, 10.3, 19.6, 39.0), beer/wine (8.6, 20.5, 41.9, 61.2), liquor (3.0, 12.2, 38.8, 60.0), marijuana (1.2, 8.8, 23.0, 41.9) were lower than overall state levels for most drugs. Twelfth graders in Montgomery County reported slightly higher rates of ever and 12 month use of cigarettes (MAS, 2004).

Across all grade levels, availability of drugs on school property and outside school property was higher for users (ever tried the substance in question) than for non-

users. Alcohol represents the drug least likely to be offered to students on school property for both users and non-users in all grade levels. The percentage of respondents offered alcohol, cigarettes, and other substances on and outside of school property increased from 6th to 10th grade; the greatest increase in availability for users of all substances occurred between the 6th and 8th grades (MAS, 2004).

The State of Maryland has implemented curricula in grades K-12 that provide information on how students should avoid pressure to use drugs. The MAS assessed whether students were taught resistance skills, felt comfortable saying no, used resistance skills in the past, and/or planned to resist in the future. More than 67% of users and non-users across all grade levels (6th, 8th, 10th, 12th) reported that they were taught the skills to resist pressures to use alcohol, tobacco, and other drugs. Across these categories, considerably more non-users than users reported that they were taught steps to resist social pressure, felt comfortable saying no, and planned to resist using substances in the future (MAS, 2004).

Participant Selection and Recruitment

Expert Panel

After generating the initial item pool, an expert panel was asked to review and rate the appropriateness of each item with respect to the wording, response format, instrument directions, and pressure situations. Experts were selected using a snowball sampling method. First, individuals in specific expert areas were identified through past research efforts; that is, the leading researcher and/or dissertation committee members had worked with them on previous projects. Second, published literature related to

adolescent drug use and RSE, specifically, was used to identify additional experts. Lastly, some experts were asked to identify other colleagues with expertise in specific domains. At least three experts were invited from each of four research areas in an effort to ensure that a minimum of eight individuals agreed to participate.

Sixteen experts were invited to participate in the panel. These individuals had expertise in 4 areas including: 1) school health education; 2) scale construction and measurement; 3) substance use; and 4) adolescent health and development. Appendix A presents the group of experts that were invited to participate in the expert panel.

In October 2004, 16 experts were invited through an email invitation which included a brief overview of the study and guidelines for the expert's review of items (Appendix B). The first email informed experts that they would be receiving the invitation to participate in the study and asked whether they preferred to receive the materials in hard copy or electronic format. Ten of the 16 invited experts agreed to participate in the study (see Appendix B). All of the participants preferred to receive materials through email communication. Eight experts returned completed materials via email, and two experts returned hard copies of materials through mail. Six invited experts never replied to the participation invitation. Additional sampling of experts was not necessary since ten from the original list agreed to participate.

Students

Convenience samples of 7th grade students were recruited from MCPS middle schools to participate in three stages of the present study: 1) focus groups (n=12); 2) preliminary scale pilot testing (n=46); and 3) final scale administration (n=283). Recruitment was conducted in collaboration with MCPS. The MCPS Coordinator for

Health Education identified teachers working in a geographically diverse sample of schools. Teachers were selected based on their past willingness to participate in special projects and notable performance as dedicated teachers. These teachers were contacted via email and asked to arrange a testing time during a health education class period.

During each recruitment phase, an email invitation provided teachers with a brief overview of the study, guidelines on the data collection procedures, and possible dates for data collection. The teachers were involved in scheduling the data collection. Students were recruited to participate in each phase of the study prior to receiving the normal drug prevention curriculum normally delivered in MCPS 7th grade health education classes. Teachers provided students with parental permission slips to be signed at least 5 days before the scheduled data collection. Students were asked to read and sign an assent form directly before data was collected. Seventh-grade students who read English as their first language, returned a signed parental permission form, and signed a student assent form were considered eligible to participant in the study. To maximize the validity of self-reports, the confidentiality and anonymity of responses were emphasized to participants (see Human Subjects).

Data collection

Phase One – Item Generation and Scale Construction

Initial items were generated through a review of past literature (Torabi & Jeng, 2001). The purpose of this review was two-fold. First, it was used to obtain background information on adolescent drug use, pressure to use drugs, and resistance self-efficacy. Second, the review was used to identify existing instruments that measure constructs such

as resistance skills, drug pressure, and drug self-efficacy. Once scales were identified an additional, more focused review was undertaken to examine scales' appropriateness for an adolescent sample. An initial list of items was generated based on themes that ran through the literature and an examination of other scales. A Table of Specifications served as a matrix for the development and refinement of the initial structure of the DURSE instrument. RSE beliefs were subdivided by drug type and pressure situation (each item included a specific drug offer in a specific pressure situation) (see Results section).

Some aspects of instruments (i.e. wording, content) used by other researchers were applied to the new instrument. Two scales, in particular, which were described in the Centers for Substance Abuse Prevention's (CSAP) Core Measures Initiative, were designed specifically to measure resistance self-efficacy related constructs and were selected as important comparisons for the new scale.

Phase Two: Qualitative Data

Expert Panel

Ten of 16 invited experts received the initial pool of items presented in the structured Table of Specifications as well as a description of the DURSE scale. At least two individuals participated in the panel from each area of expertise including Measurement/Scale Development (n = 2); School Health Education (n=3); Alcohol, Tobacco and Other Drug Use (n = 3); and Adolescent Health Behavior (n = 2).

A rating form designed to evaluate potential DURSE items was sent to each expert via email (Appendix C). This form included four sections that asked experts to

judge the following: 1) relevancy of each item to the conceptual definition of RSE (high relevance = A, moderate relevance = B, low relevance = C); 2) realistic nature of pressure situations for 7th grade students (very realistic=A, realistic=B, not realistic=C); 3) three wording options with respect to its appropriateness to the target audience; and 4) response format with respect to its appropriateness to the preliminary items. The form included an additional section which sought qualitative comments from the experts. These comments were used to generate suggestions for untapped pressure situations as well as insight on vague or confusing wording and inadequate items.

Student Focus Groups

Two focus groups were conducted with 7th grade students (n=12), one with females (n=6) and one with males (n=6). Focus groups involve carefully planned and documented discussions among six to twelve relatively homogenous individuals around specified topics of interest. Focus groups were employed to get feedback on proposed pressure situations as well as elicit additional pressure situations. Focus group participants were also asked to provide feedback on whether proposed drug pressure situations were realistic. Focus group discussions provided qualitative analysis of the groups' perceptions of age-appropriate situations of social pressure to use drugs. Focus group feedback also delved into participants' perceptions of the dynamics of social pressure as a problem affecting middle school students.

The focus groups were led by the lead researcher of this study who has experience leading focus groups with young adolescents. A focus group guide was developed by the researcher to elicit information regarding the nature of drug pressure and feedback on a list of pressure situations. The guide also included an introduction, ice breaker questions,

and other related questions about peer pressure in general and drug prevention (Appendix D). Focus groups were audio-taped and transcribed by the researcher. A research assistant recorded notes during the session to provide back-up documentation of the taped transcription. These procedures were approved by University of Maryland's IRB (see Human Subjects).

Phase Three: Pilot-testing of Preliminary Scale

The preliminary scale was prepared for pilot administration following the expert panel review and analysis of focus group data. The preliminary scale was administered to a group of 7th grade students (n=46) in two MCPS 7th-grade health education classes. The MCPS tobacco prevention specialist administered the anonymous paper/pencil self-report instrument during class time in MCPS middle school classrooms. She followed a protocol developed by the lead researcher that asked her to describe the purpose of the survey to the respondents and go over the general directions. The protocol directed her to advise students to choose the best answer for each question, and if respondents were unclear about a question, they were asked to either leave it blank or make the best possible choice. Students were asked to keep their survey at their desk and sit quietly until all students had finished completing the survey. Upon completion, the students were invited to participate in an open-ended discussion in the classroom moderated by the MCPS tobacco prevention specialist and recorded by the classroom teacher who sat in the back of the classroom. Students were told that they could sit quietly during this discussion if they did not wish to participate. The preliminary scale and debriefing guide for the discussion is presented in Appendix E and Appendix F. Students received

colorful pencils for participating in the study. These discussions were not audiotaped. The completed surveys and qualitative discussion notes were collected at the end of the discussion, placed in a pre-addressed Federal Express envelope and sent to the researcher for data entry and subsequent analysis.

Phase Four: Final scale administration

The final scale was administered to a different group of MCPS of 7th grade students (n=283, 11 classes) during their health education class. The final questionnaire consisted of the DURSE items, two related scales, three demographic questions (gender, race/ethnicity, and age), a social desirability scale, a drug intention scale, an academic performance item, and a family use scale. The questionnaire was administered to students by teachers, who were asked to follow a standard protocol in giving instructions and answering questions (Appendix J). Confidentiality and anonymity of responses were emphasized to participants. Data collected through the final scale administration was used to evaluate evidence of scale dimensionality, reliability, and validity.

Instrumentation

The final questionnaire included a total of 51 items. The final self-report instrument included the following measures: 1) the 24-item DURSE scale; 2) the 4-item Wake Forest University Drug Refusal Skills (DRS) scale (SAMSHA/CSAP, 2003); 3) the 5-item Refusal Skills (RS) scale (SAMSHA/CSAP, 2003); 4) an academic performance item; 6) a 3-item intention scale; 6) the 8 item short form of the Marlowe-Crowne Social

Desirability scale, 7) a 3-item family drug use scale, and 8) demographic questions (gender, race/ethnicity, and age) (Appendix G).

Outcome Variables

Drug Refusal Skills**:** The Drug Refusal Skill (DRS) Scale (Hansen et al., 1997) was used to measure perceived self-efficacy as well as likelihood of refusing a drug. The DRS scale is a 4-item scale that assesses perceived ability to refuse offers to use alcohol and marijuana from best friends (i.e. Pretend your best friend offered you marijuana and you did not want it. How hard would it be to refuse the offer?). Response options range from 1=very hard, to 4=very easy. In previous research, this scale has demonstrated adequate internal consistency (coefficient alpha = .80). The instrument has been tested on White, African American, Hispanic, middle school, junior high school, and high school students (SAMSHA/CSAP, 2003; Hansen & Mcneal, 1997).

Refusal Skills: The Refusal Skills scale (RS) (SAMSHA/CSAP, 2003) was used to assess the ability of youths to refuse various forms of peer pressure. The RS is a 5-item scale that assesses perceived ability to refuse offers to use cigarettes, alcohol, marijuana/hashish, cocaine, or inhalants (i.e. Would you be able to say "no" when someone tries to get you to (insert drug)?). Response options range from 1="definitely would not" to 5=definitely would. The instrument has been tested on White, African American, and Hispanic students in middle school, junior high school and high school (SAMSHA/CSAP, 2003). In previous research, this scale has demonstrated adequate internal consistency (coefficient alpha = .97).

Academic Performance: Academic performance was assessed by asking students "During the past year, how would you describe your grades in school?" Response options included 1=Mostly F's, 2=Mostly D's, 3=Mostly C's, 4=Mostly B's, 5= Mostly A's, 6=Not sure. Not sure was recoded to equal 0.

Drug Use Intention: Students' future intentions to use cigarettes, alcohol and marijuana were assessed with the question: At any time during the next 12 months, do you think you will smoke a (insert drug)? Response options included 1=definitely not, 2=probably not, 3=probably yes, 4=definitely yes.

Social Desirability: The short 8-item version of the Marlowe-Crowne Social Desirability scale (Ray, 1984) was included to measure the association between student responses on the DURSE scale and the need for social approval and tendency to respond in a socially desirable way. Students were asked questions such as "Have there been times when you took advantage of someone?" and "Are you always a good listener?". Scores range from 8 to 24, with higher scores indicating greater social desirability.

Forms of the original 33-item Marlowe-Crowne Social Desirability scale (Crowne & Marlow, 1960; 1964) have been widely used to assess response bias in self-report research. Research regarding adequacy of internal consistency for short forms of the scale have resulted in conflicting findings (Ray, 1984; Barger, 2002). The 8-item scale used in this study was slightly modified to simplify wording for young adolescents. In the current study, the scale had low reliability (.60).

Family Drug Use: Family drug use was assessed with a 3-item scale. Students were asked the following: "Do any of your family members (parent or guardian, brother/sister) have a problem with [alcohol, cigarettes, marijuana]? Response options

included 0 = No, 1 = yes, my parent or guardian, 2 = yes, my brother/sister, and 3 = yes, both parent and brother/sister. Because most students reported "No" on all family use items, response options were collapsed into a new variable and recoded including, 0= 0 on all items, 1= 1 *or* 2 on item (parent/guardian or sibling), and 2= 1 *and* 2 on item (both parent/guardian and sibling).

Other Variables: Demographic information was collected on the first page of the final instrument. To assess age, students were asked "How old are you?" and asked to fill in a number of years. Gender was assessed by asking students "Are you female or male?" (0=female, 1=male). Ethnicity was also assessed using an item borrowed from the CDC Youth Risk Behavior Survey (2005). Students were asked "How would you describe yourself?" Response options included American Indian, Asian, Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander. If students circled more than one ethnic category, responses were coded into an "Other" category resulting in 7 response options.

Data Analysis

Phase Two – Qualitative Data

Expert Panel

Experts' ratings and open-ended suggestions were examined carefully and used to determine item inclusion and revision for the preliminary scale (DeVellis, 2003). The researcher proposed decision criteria for retaining, deleting, and rewriting items prior to the expert panel review. Items that received a rating of "C" on the rating scales by more than half of the experts were eliminated; items that received a rating of "B" on either or

both scales were revised; and items that received "A" by more than half of the experts on both scales remained unchanged.

Focus Groups

The lead researcher transcribed the audiotaped focus group discussions and used the observer notes to validate and supplement the audiotaped transcripts. Data were then reviewed by the lead researcher and organized by common themes or patterns that emerged from the coding. Repeated or similar statements were then aggregated. Initial coding was used to identify data relevant to the scale development. That is, data that related specifically to the focus group question or discussion. Responses and personal stories that digressed from the focus group questions were identified as not relevant. A second review was used to eliminate less useful categories and combine smaller categories and repeating ideas into overall themes. Strong agreement among participants (either verbally or nonverbally) following a statement from one participant was also noted. Interesting quotes, those that supported main themes, were bolded and highlighted for possible inclusion in the Results Section. Since respondents were asked about the realistic nature of a specific list of pressure situations, this part of the results was more structured than other areas of open discussion. Separate transcripts were created for each focus group and thus, were stratified by gender. Themes and patterns that emerged from each set of data were examined for similarities and differences across gender. Common themes and key issues that emerged from the focus groups were considered when revising the content of the scale.

Phase Three: Pilot Data

The preliminary instrument was administered to a sample of 46 7th grade students in two MCPS health education classes to conduct initial item analyses as well as qualitative evaluation of the wording and interpretation of the items.

Notes from the qualitative discussions were reviewed thoroughly. Any student feedback about the survey items were considered for scale revisions with particular attention on issues that surfaced during both discussions. For example, students from both classes expressed confusion about the nature of the questions (i.e. knowledge vs. belief) and the difference between response options (i.e. completely sure, very sure). Suggestions that were inappropriate or impossible to implement were not used to revise the scale. For example, some students felt that the items should include other drugs such as cocaine ecstasy. While this comment may be useful for future research, the current study focused on alcohol, tobacco and marijuana.

After administering the scale, the data were cleaned by examining outliers and missing data for errors. Data were analyzed using SPSS. Item means, medians, and standard deviations were calculated for each item. Pearson product moment correlations between each item score and total subscale score were calculated. A Correlation coefficient of at least .20 between the item score and the total scale score was established as the threshold for adequacy (Spector, 1992). That is, these items were adequate for further testing because they correlated substantially with other items. Item responses were examined to indicate whether scores were highly skewed and unbalanced (close to the center of the range of possible scores). Items with means near extreme ends of the

response range, and thus low variance, were further examined for correlation with other items.

Phase 4 – Final Scale Administration

Phase Four data analysis was used to answer the proposed research questions and test hypotheses. Item analysis procedures as described above were conducted on the final set of data. Descriptive statistics were calculated for key variables. Internal consistency for scale items was generated using Cronbach alpha. Bivariate associations between continuous variables were tested using Pearson correlation coefficients. Differences in mean DURSE scores were tested among male and female participants. DURSE scores were compared across ethnic categories using one-way ANOVA analyses. Since this study was exploratory in nature, the significance level was set at .05 to decrease the chance of Type I errors. Exploratory factor analysis, an essential tool in scale development, was used to determine the number and content of factors underlying the initial set of items so other statistics such as Cronbach's alpha could be performed accurately (DeVellis, 2003).

Research Questions

Question 1: What is the underlying factor structure of drug use resistance self-efficacy (RSE) beliefs among young adolescents?

1a. Do DURSE items represent a common underlying dimension or separable content-specific dimensions of RSE beliefs among adolescents?

Factor Analysis

Using SPSS, exploratory factor analysis (EFA) was performed to indicate the factor structure of the DURSE scale. This approach was useful because it was suspected that a measure designed to assess RSE beliefs among young adolescents contains a meaningful dimensional structure and that assessing the separate dimensions would lead to a better understanding of the phenomenon.

Factor analysis is a multivariate analysis method which aims to explain the correlation between a large set of variables (items) in terms of an independent set of underlying factors. This statistical method can serve as an important tool for validating the structure of instruments. According to Nunnally (1978), factor analysis is not a simply defined statistical method, but a broad category of methods for conceptualizing groupings of variables that includes mathematical procedures for assigning variables to certain groups.

The initial factors were extracted through Principal Components Analysis (PCA). PCA seeks a linear combination of the original variables extracting the maximum variance (common and unique) from the variables. Once this variance is removed, the model seeks a second linear combination to explain the maximum proportion of the remaining variance, and so on. The linear function, or principal component, is referred to as an eigenvector and the amount of the total variance that is explained by this eigenvector is known as the eigenvalue (λ) (Bryant & Yarnold, 1995).

Eigenvectors are defined by *factor loading coefficients* (factor loadings). *Factor loadings* represent the correlation coefficients between the variables (rows) and factors (columns). Factor loadings were presented in a matrix labeled Rotated Component

Matrix in SPSS. The sum of the squared factor loadings for all factors for a given variable (row) is the variance in that variable accounted for by the item and is referred to as the *communality*.

Communality (h^2) of a variable (item) equals the sum over all factors of the squared factor loadings for an item and indicates the amount of variance an item shares with the other items in the analysis (Bryant & Yarnold, 1995). SPSS provided initial and extracted communalities; the extracted communality represented the percent of variance in a given item explained by the factors which are extracted (Bryant & Yarnold, 1995). In PCA with no factors dropped, the communality would equal 1.0 or explain 100% of the variance so initial communalities, reported in SPSS, always equal 1. Extracted communalities indicated how well the factor structure worked for each item (i.e. how much of the original variable's variance is explained by the factor structure).

Factor loadings were considered the basis for imputing a label to different factors. Typically, researchers consider variables with factor loadings of at least .30 as "loading on the eigenvector" and thus include those variables in the interpretation of the meaning of the factor. For example, a factor loading of .30 means that the item and the eigenvector (factor) share $(.30)^2$ x 100% or 9% of their variance (Bryant & Yarnold, 1995). Spector (1992) posits that a minimum value of about .30-.35 is required to consider that an item loads on any factor (Spector, 1992). For the present study, items that had substantial loadings on one factor (greater than .5) and less substantial (no greater than .3) on other factors were retained for inclusion and interpretation of that factor.

The e*igenvalue* for a certain factor measures the variance in all the items which is accounted for by that factor. Therefore, a factor with a low eigenvalue is contributing little to the explanation of variances in the items, and may be considered an unimportant or redundant factor. Eigenvalues measure the amount of variation (not the percent of variation explained) in the total sample accounted for by each factor. It should be noted that a factor's eigenvalue may be computed as the sum of its squared factor loadings for all of the variables.

The number of factors retained was determined by Kaiser's rule and Cattell's scree plot criterion. Several "stopping rules" have been developed to determine the number of factors (eigenvectors) to extract from the data (Bryant & Yarnold, 1995). In the present study, the two most common stopping rules, both based on eigenvalues, were used to determine the appropriate number of eigenvectors (Bryant & Yarnold, 1995). The Kaiser's stopping rule retains only factors with absolute eigenvalues of at least 1.0; therefore, according to Kaiser criterion, all factors whose eigenvalues are less than 1.0 were dropped. Past research suggests that Kaiser's rule should be used in two instances: 1) when there are fewer than 30 items and the communalities are greater than .70, or 2) when there are at least 250 observations and the communalities are at least .60. Otherwise, the Cattell scree test should be used in applications for which there are at least 200 observations and the communalities are "reasonably large."

The Cattell scree test, a graphical procedure, plots the components on the X axis and the corresponding eigenvalues on the Y axis. The scree test is also based on eigenvalues but uses relative rather than absolute values as a criterion (DeVellis, 2003). According to Cattell's test, factors that lie above the elbow (transition from vertical to

horizontal) should be retained. In other words, the vertical portion of the plot includes the important factors and the horizontal portion is considered the scree, the unimportant factors. Thus, only the eigenvalues and corresponding eigenvectors in the steep decline are retained (Bryant & Yarnold, 1995).

Both criteria were used in this research. In addition, "subjective criteria" or factor interpretability were used if the results from the two criteria called for retaining different numbers of factors. That is, factors were assessed as to the extent to which the items associated with them made theoretical or logical sense, based on the apriori conceptualization of RSE.

Once the factors were extracted, the resulting matrix was rotated for easier interpretation. Rotation methods serve to achieve simple structure and to facilitate interpretability of data. Types of rotation are usually classified as either orthogonal (uncorrelated) or oblique (correlated). Since this study served as an initial scale construction study and drug-specific RSE beliefs may be correlated, the magnitude of the correlations between factors served as a guide for determining what type of rotation to use (DeVellis, 2003).

Results were assessed for final construction of the subscales. First, communalities were assessed for how much variance in the original items was explained by the extracted factors. Second, factor loadings were used to determine appropriate items. Items with substantial loadings on one factor (greater than .5) and less substantial (no greater than .3) on other factors were retained for inclusion and interpretation of that factor.

Assumptions

The assumptions underlying factor analysis include (Bryant & Yarnold, 1995):

1) Interval level data are assumed. That is numerically equal distances on the scale represent equal distances on the dimension underlying the scale (Bryant & Yarnold, 1995).
2) PCA is a linear procedure and linearity is assumed. Linearity refers to a straight line or linear relationship between variables.
3) Extreme scores, or outliers, can have undesirable effects.
4) PCA has no distributional assumptions but data will be screened for normality because multivariate normality is required for related significance testing.
5) Underlying dimensions that share clusters of items are assumed. Expert review of items for content validity was assessed.
6) Moderate to moderate-high (> 3.0) intercorrelations are required, otherwise a factor solution will result in as many factors as there are original variables.
7) Factor interpretation and labels must have face validity and/or be grounded in theory. Therefore, expert panel review of items and their relevancy to factor labels were performed.

Scale Characteristics

Reliability estimates (Cronbach's alpha) were calculated as a measure of the internal consistency of each subscale and the total scale identified by factor analytic procedures. Cronbach's alpha is a direct function of the number of items and their strength of intercorrelation. This statistic reflected the internal-consistency reliability and

indicated the proportion of variance in the subscale scores that was attributable to the true score.

The proposed scale consisted of multiple-value response options that were considered interval-level scale items because it was assumed that numerically equal distances on the scale represented equal distances on the dimension underlying the scale. Likert-scaled, multipoint rating items are generally considered interval or quasi-interval and classified as continuous (Floyd & Widaman, 1995). Internal consistency, or homogeneity of the items within a scale, was measured with the widely used Cronbach's alpha coefficient alpha, α. For the present study, the following criteria was set for alpha: below .70, unacceptable; between .70 and .75, minimally acceptable; between .75 ad .80, respectable; between .80 and .90, very good; much above .90, possibly consider shortening the scale (DeVellis, 2003).

Test-retest reliability is a two-score method used to measure temporal stability, or the consistency of scores from one testing time to another (DeVellis, 2003). Theoretically, if a measure truly reflects a construct, assessment of that construct should be comparable on different occasions. DeVellis (2003) also notes that test-retest correlations are accurate estimates of the measure when researchers are highly confident that the phenomenon of interest has remained stable. In this study, students in MCPS health education classes were recruited for final administration at the beginning of an academic quarter. MCPS 7th grade students receive a normal drug prevention curriculum during their health education quarter leaving only a few weeks after the initial data collection for testing the stability of the scale. While demonstrating temporal stability is

an important reliability estimate, it was not tested in this study and will deserve future investigation.

Intrasubscale item correlations (i.e. among the items that make up each subscale) and intersubscale item correlations (i.e. between the items of different subscales) were assessed to determine whether DURSE subscales would be combined into a single overall score. That is, whether DURSE subscales would be assessed and analyzed separately and/or combined into an overall DURSE score. Each item in the scale should correlate higher with its respected subscale than the total scale or the other two subscales, and intersubscale item correlations should be significantly greater than zero but less than the average within subscale values (Clark & Watson, 1995). To better understand the results, a few descriptive analyses were conducted. DURSE scores were compared across gender and ethnicity and correlated with age.

Sample Size

For factor analysis procedures, DeVellis (2003) describes a range of published sample size recommendations. A ratio of 5 to 10 respondents per item up to about 300 participants or a sample size of 200 respondents involving less than 40 items is considered adequate for most factor analytic procedures. An additional recommendation regarded a sample size of 100 as poor, 200 as fair, and 300 as good (DeVellis 2003).

Question 2: Are resistance self-efficacy beliefs related to established measures of other constructs?

2a. Higher levels of drug use resistance self-efficacy will be associated with higher reports of academic grades among adolescents.

2b. Higher levels of drug use resistance self-efficacy will be associated with lower reports of intentions to use drugs among adolescents.

2c. Higher levels of resistance self-efficacy will be associated with lower reports of family drug use among adolescents.

Validity

In general, validity refers to whether a scale is measuring what it intends to measure (Nunnally, 1978). Without evidence of validity, an instrument may be consistent in measuring the wrong construct. Therefore, reliability is a necessary condition for validity, but not a sufficient condition (Nunnally, 1978). Validity is a complex concept that can be classified into 3 subtypes: content, criterion-related, and construct (Torabi & Jeng, 2001; DeVellis, 2003).

Content validity. Content validity concerns the extent to which a set of items reflects a content domain (DeVellis, 2003). Scale construction based on a well-defined theoretical foundation, an initial table of specification, and review of items by experts for relevance to the construct of interest, and focus group feedback were used to maximize content validity (Torabi & Jeng, 2001; DeVellis, 2003). Thus, content validity was assumed as a result of the application of these appropriate procedures.

Criterion-based. Criterion-based validity is a temporally neutral term that refers to whether an item or scale has an empirical association with some criterion (DeVellis, 2003). Criterion-based validity, commonly synonymous with predictive validity, was assessed as part of the study by correlating scores on the DURSE instrument with adolescents intentions to refuse (or use) drugs at some point in the future. However, establishing whether the proposed RSE scale predicts actual reported adolescent

substance use behavior was not assessed and would be required to further establish the validity of the DURSE scale.

Construct validity is directly related to the theoretical relationship of a variable to other variables, or in other words (DeVellis, 2003), the extent to which the proposed RSE scale is measuring a theoretical concept (Torabi & Jeng, 2001). Discriminant and convergent validities are frequently examined together and involve studying the strengths or patterns comparatively among variables (Spector, 1992). Convergent validity refers to a strong correlation between different measures of the same construct. Discriminant validity means that measures of different constructs should relate only modestly with each other (Spector, 1992). The underlying idea is that a scale will correlate more strongly with another measure of the same construct than it will correlate internally with subscales measuring different constructs (Spector, 1992). Convergent validity was assessed by correlating DURSE scores with DRS and RS scale scores. Further, DURSE scale scores were correlated with additional measures to assess the association between DURSE items and social desirability, academic performance, and family drug use and thus examined discriminant validity.

Bivariate correlations were assessed using Pearson product moment correlation coefficients. Correlations between DURSE subscale scores and drug use intention scores were calculated to evaluate predictive validity. Behavioral intentions were a proxy for future drug use behavior. Pearson product moment correlation between DURSE subscale scores and academic performance and family drug use scores were calculated to evaluate construct validity.

Question 3: Are DURSE items significantly influenced by social desirability among young adolescents?

Pearson correlations between DURSE subscale scores and the Marlowe-Crowne Social Desirability scale was calculated to assess whether respondents may have responded in a socially desirable way.

Question 4: Does the DURSE instrument capture different aspects of resistance self-efficacy beliefs among young adolescents compared to related measures of resistance self-efficacy?

To evaluate convergent validity, two additional scales measuring related constructs were administered to respondents in addition to the DURSE scale. It was hypothesized that DURSE scores would be moderately positively correlated with the Wake Forest Drug Refusal Skills (DRS) and the Refusal Skills (RS) scale scores. The DRS scale is a 4-item scale that assesses perceived ability to refuse offers to use alcohol and marijuana from best friends (i.e. Pretend your best friend offered you marijuana and you did not want it. How hard would it be to refuse the offer?). Response options range from 1 = "very hard" to 4 = "very easy". The Refusal Skills scale (RS) (Botvin, SAMSHA/CSAP, 2003) is a 5-item scale that assesses perceived ability to refuse offers to use cigarettes, alcohol, marijuana/hashish, cocaine, or inhalants (i.e. Would you be able to say "no" when someone tries to get you to (insert drug)?). Response options range from 1="definitely would not" to 5=definitely would.

Pearson product moment correlation between DURSE subscale scores and DRS and DR scale scores were calculated to evaluate convergent validity. The DRS and DR scales were incorporated into a factor analysis with the final DURSE items to assess

whether the existing scales miss an important aspect of RSE beliefs among young adolescents and do not tap the same dimensions of the construct as the DURSE instrument.

Missing Data

Data collected during Phase Four was analyzed for missing responses. Missing data for ten DURSE items equaled 2.2 percent. When calculating total scale scores, this resulted in 8.7% of missing data. The item mean substitution method (IMS) was used to account for missing items. That is, missing items were replaced with item means. This approach is considered an acceptable approach for dealing with missing data on Likert scales when the number of missing items and the number of respondents with missing items for each scale are 20% or less (Downey & King, 1998).

Human Subjects Procedures

Data were collected from participants during three stages of this research. Twelve 7th grade students from two MCPS health education classes were recruited to participate in two focus group discussions during Phase II of the study. Forty-six 7th grade students were recruited from two MCPS classes to participate in pilot testing of the DURSE scale which included self-report completion of a pencil/paper scale and a follow-up qualitative discussion. Demographic information was not collected on this sample. Two hundred eighty-three 7th students from seven MCPS schools participated in the final survey study. All data were self-reported by students.

Students were recruited through the assistance of the MCPS Coordinator of Health Education and 7th grade teachers. Students who did not receive parental permission, sign an assent form, or speak English were excluded from the study. Teachers identified by the MCPS Coordinator of Health Education were asked permission through an email invitation if they were willing to recruit students for each phase of the study. One teacher recruited focus group participants from two 7th grade health education classes. One teacher recruited students in two of her health education classes to participate in the pilot study. Seven teachers from seven MCPS middle schools recruited 7th grade students and administered the final survey in one or two of their health education classes. In each phase, data were collected from students before they received the drug prevention unit that is part of their normal health education curriculum.

All research methods and necessary consent forms were approved and stamped by the University of Maryland Institutional Review Board (IRB). IRB applications including student assent and parent consent forms as well as approval forms for each study phase are attached: 1) Phase II: qualitative focus groups with 7th grade students (Appendix H); 2) Phase III – pilot testing among sample of MCPS 7th graders (n=46) (Appendix I); and 3) Phase IV – final scale administration among a different sample MCPS 7th grade students (n=283) administered by seven MCPS teachers (Appendix J).

Risks to study participants were minimal. Responses to some survey items may have caused discomfort or anxiety among subjects. Qualitative discussions may have also elicited potentially sensitive information regarding self-disclosure of drug offers and/or pressure situations. Parental consent and student assent were required and collected for each stage of data collection. It was possible that students did not receive any benefit

from participating in any phase of the study. However, study findings may benefit MCPS and middle-school teachers and students in the future.

Focus group data (tapes and transcripts) was kept in a secure area at the office of the researcher. Upon completion of the study, the tapes will be deleted and destroyed. Findings based on the focus groups were not reported in terms of specific individuals but were discussed in aggregate. Data from the pilot and final survey study were kept in a locked filing cabinet. Individual student names were not used when notes were taken on the group discussion following the pilot test and findings were not reported in terms of specific individuals but were discussed in aggregate form. Participants were verbally informed about the purpose of the pilot test, confidentiality, benefits and risks of participation, and reminded that they should not put their name on any page of the instruments. Parental consent and student assent forms were kept in a locked filing cabinet and kept separate from hard copy and computer data. Computer data files were also kept on a secure computer only accessible by the investigator.

CHAPTER 4: RESULTS

Introduction

The aim of this study was to develop an instrument to measure drug use resistance self-efficacy (RSE) among young adolescents and to assess the initial reliability and validity of the instrument. A 24-item instrument was developed and tested using a convenience sample of 7th graders (n=283). Chapter Four describes the results of the scale development study, including: 1) qualitative data collected through expert review and student focus groups; 2) pilot testing of the initial items; and, 3) final results corresponding to the study research questions.

The results are organized by research phases. Phase I included construct clarification, description of the reference population, and an explanation of how the preliminary table of specifications for initial item generation was derived. Phase II included completion of item generation based on expert panel review and student focus group. Phases III and IV included the pilot testing and final scale administration, respectively. Statistical analyses included exploratory factor analysis to identify the underlying dimensions of resistance self-efficacy as assessed by the DURSE instrument. An item analysis based on factor analysis results provided psychometric evidence for the final scale. Validity was examined by correlating the DURSE scores with other related constructs.

Summary of Research Phase Activities

Phase 1 – Initial Item Generation

Phase I included a review of the literature in an effort to obtain background information on drug use resistance self-efficacy among adolescents and identify existing instruments designed to measure these types of attitudes and beliefs. As described in Chapter Three, a Table of Specification (see Table 4.1) consisting of 3 drug-specific areas was developed as a matrix to guide the structure and generation of the initial DURSE items. RSE beliefs were subdivided by drug type and pressure situation (each item related to a specific drug offer in a specific pressure situation) in the Table of Specification.

Phase 2 – Qualitative Results

Expert Panel

The Table of Specifications, three wording options, and one response format were presented to a group of experts in areas including: 1) Measurement/Scale Development, 2) School Health Education, 3) Alcohol, Tobacco and Other Drug Use, and 4) Adolescent Health Behavior. Ten of 16 invited experts agreed to participate in the study and provided feedback through mail and email communication. Experts were asked to review the initial set of items and judge each item for its relevance to the conceptual definition of RSE provided (see Table 4.2). Response options included high, moderate and low relevance. Majority agreement on item domain served as the criterion for which to retain items. That is, items were considered important if most experts rated them as highly or moderately relevant. Qualitative comments were also considered when revising items.

Table 4.1 Preliminary Table of Specifications and Sample Items for the Drug Use Resistance Self-efficacy Inventory for Young Adolescents (DURSE)

DESCRIPTION **Drug Use Resistance Self-efficacy:** This measure will be designed to assess seventh grade students' substance use resistance self-efficacy. This construct aims to capture an individual's judgment of his/her capability to resist offers to use cigarettes, alcohol and marijuana in different pressure situations.							
DIRECTIONS: The purpose of this questionnaire is to help us get a better understanding of how hard it is for students to resist drug offers. Please rate **how sure you are that you can resist offers to use cigarettes, alcohol, and marijuana in the situations described below** by circling the appropriate number. Your answers will be kept strictly confidential and will not be identified by name. Please give your honest opinions.							
Situation	At party with dating partner (girlfriend or boyfriend)	At your home with a friend when no one home/At your home with a friend when no adult is home	At home with family member, siblings and cousins included?	Outside setting away from your home (park, street, school)	At a friend's home when no adult is home	At a party with friends	Riding in a car with others? (friends, siblings)
Drug							
Alcohol	offer to drink alcohol at a party with a dating partner?	offer to drink alcohol at your home when no adults are home?	offer to drink alcohol at home with family members?	offer to drink alcohol at an outside setting away from you home?	offer to drink alcohol at a friend's home?	offer to drink alcohol at a party with friends?	offer to drink alcohol when riding in a car with others?
Cigarettes	offer to smoke a cigarette at a party with a dating partner?	offer to smoke a cigarette at your home when no adults are home?	offer to smoke a cigarette at home with family members?	offer to smoke a cigarette outside away from your home?	offer to smoke a cigarette at a friend's home?	offer to smoke a cigarette at a party with friends?	offer to smoke a cigarette when riding in a car with others?
Marijuana	offer to smoke marijuana at a party with a dating partner, if you want to?	offer to smoke marijuana at your home when no adults are home, if you want to?	offer to smoke marijuana at home with family members, you you want to?	offer to smoke marijuana outside away from your home?, if you want to?	offer to smoke marijuana at a friend's home when no adult is home?	offer to smoke marijuana at a party with friends?	offer to smoke marijuana when riding in a car, if you want to?

Item Relevancy

The majority of experts rated five of the eight situations as highly relevant. These situations included: 1) at a party with a girlfriend/boyfriend; 2) at home when no adults are home; 3) at a friend's home when no adults are home; 4) at a party with a friend; and 5) from a best friend at a party. The other three items were rated highly or moderately relevant by the majority of experts. Table 4.2 provides a summary of expert comments and recommendations for each situation (i.e. statements were adapted for each drug type).

Table 4.2. Summary of Experts' Comments Across Item Stems

Item	Qualitative Comments and Recommendations
Say no to an offer to (drug activity) at a party with a boyfriend or girlfriend?	Clarification was needed regarding "who is making the offer". Experts who rated this item as moderately relevant did so because of the "boyfriend/girlfriend" aspect; most 7th graders won't have boyfriends/girlfriends. It was suggested that the item be generalized to friends and one expert suggested distinction between same and opposite gender friends.
Say not to offer to (drug activity) at home with family members	Clarification regarding the context of the situation (birthdays, holidays) and distinction between family member was recommended (siblings, cousins, adult vs. non-adult). Two experts judged these items as less common and associated them with less pressure.
Say no to an offer to (drug activity) at your home when no adults are home	Depended on the likelihood of being caught; Distinguish between adult and non-adult family members; Clarify who is making the offer; Alcohol – less relevant because parents may offer beer/wine to kids
Say no to (drug activity) at a friend's home when no adults are home	Clarify who is making the offer
Say no to (drug activity) at an outside setting away from your home (for example, a park, bus stop, or school)	Clarify who is making the offer; Use more secluded context (park or field); Be more specific with situation
Say no to an offer to (drug activity) at a party with friends	These are better items because friends more relevant than "girlfriend/boyfriend" for this group; Suggestion to add "no adults present"
Say no to an offer from your best friend to (drug activity) at a party	These items are not consistent with others because they describe the source of the offer. Could have a "who's offering" construct and a situation construct.
Say no to offer to (drug activity) when riding in a car with others (for example, friends or siblings)	Use either friends or siblings but not both Less relevant with 7th graders, probably more so with cigarettes

Items that involved pressure situations occurring at a party were considered relevant by most experts. A party involving girlfriend/boyfriends, however, was not considered relevant for 7th graders. Further, experts felt that the party items were confusing and needed clarification with regards to the source of the offer. Items including "your home" and a "friend's home" were mainly considered relevant. Again, experts recommended clarification of the source of the drug offer and consideration of special occasions. Riding in a car across all drug types was not considered relevant by most experts. In general, relevancy ratings for items were the same or very similar across drug types. Based on this initial assessment, all items underwent some revision.

Realistic Pressure Situations

Experts were asked how realistic each situation was to the intended population. Response options included very realistic, realistic, and not very realistic. For the most part, comments and suggestions made in response to the relevancy questions were reiterated and/or referenced when experts rated the realistic nature of pressure situations. A party was considered a realistic situation though most experts felt that "boyfriend/girlfriend" was not relevant to 7th graders. Drug pressure at home was considered realistic by some experts, though some experts noted that a distinction should be made between adult and non-adult family members as well as the presence of adults in the home during the drug offer. Further, a few experts suggested that some students may be permitted to drink alcohol at religious holidays and that this should be either clarified or included in the item. Drug pressures occurring in outside settings were generally considered highly or moderately realistic but experts suggested specifying the setting (e.g. park, school). Riding in a car was considered unrealistic for 7th grade students.

Several of the experts emphasized again that clarification was needed with regards to who was making the drug offer.

Additional changes were made based on expert review of the relevancy and realistic nature of the situations. Riding in a car was eliminated as a pressure situation. Items were reworded to precisely specify the source of the drug offer (e.g. friend, sibling), making a distinction between adult and non-adult sources. Items that involved pressure to use drugs at home and school included a statement specifying about the presence of adults during the drug offer. Examples of outdoor settings and involvement of siblings and cousins were included in some items, as appropriate.

Wording and Response Format

Experts were asked to rate three wording options. These options included the following: (1) If you want to, how sure are you that you can say no to an offer to (insert drug) at (insert situation)?; (2) If you don't want it, how sure are you that you can say no to an offer to (insert drug) at (insert situation); and (3) How sure are you that you can say no to an offer to (insert drug) at (insert situation)?. The majority of experts rated one option (How sure are you that you can say *no* to an offer to (insert drug) at (insert situation?) as the most appropriate approach to wording the DURSE questions. One expert suggested using "refuse" instead of "no" since "no" is often considered a mocked statement. This wording option was used in the final scale; however, it was coupled with the condition of refusal ("and you do not want it") so resistance self-efficacy was not confused with intentions, as recommended by SAMSHA/CSAP, 2003. .

While some of the experts rated the proposed 7-point response format as appropriate, some of the experts also felt that this format was not the best choice for measurement among 7th graders. These experts felt that a smaller number of labeled options for young respondents would result in more accurate findings. Four experts suggested using a 5-point scale, and two experts suggested using a 4-point scale. Four-point scales were considered useful in eliminating the mid-point which is often not interpretable. Experts provided detailed suggestions and ideas regarding additional response options. While some experts rated the 7-point response option appropriate for adolescents, most experts suggested other approaches (e.g. not confident at all – completely confident; not sure at all – completely sure; not sure – definitely sure). A 5-point scale (not sure at all, not very sure, somewhat sure, very sure, and completely sure) was used for the final set of pilot items. The final number of response options and labels were largely based on expert feedback.

Focus Groups Results

Focus groups involved two qualitative discussions with 7th grade students (n=12), one with females (n=6) and one with males (n=6). Common themes were identified by reviewing the audiotaped transcripts and observer notes. Patterns (i.e. repeated or similar statements) made within focus groups and/or between groups were coded and pooled together. Respondents provided information related to the content of the preliminary DURSE items, types of drug pressure settings, and possible sources of pressure. In response to a follow-up question, respondents offered ideas about how students can resist drug offers and parents can help with the problem of pressure to use drugs. Table 4.3 describes the main themes that were identified from focus group data related to potential

drug pressure offers, settings, and situations. Further, gender-specific ideas are separated to allow for comparison across the two groups.

Table 4.3 Overarching Focus Group Themes and Representative Quotes

Overall Themes

- Pressure to use drugs could potentially occur inside and outside of the home in familiar and unfamiliar settings
- Drug offers could occur at parties, on school grounds (outside or inside) including places with and without many people around
- Drug offers would most likely come from older people because there is a pressure to be liked by older people (e.g. people in high school; drug users; "irresponsible" parents)
- More pressure likely to occur as students get older (e.g. more drug use, more parties, more independence in home and outside of home)

"I think there will be more peer pressure around you; there is going to be more kids smoking."

- 7th graders find themselves in drug pressure situations because they are trying to fit in and want people to like them

"Large chain of people, first you say no to one person, then you're offered them [drugs] by another and finally people give in so you need to clearly say no"

- Parents and teachers can help in helping students resist offers though parental involvement can be bothersome and unhelpful
- Role of parents will change over time

"As you get older kids don't tell parents as much so parents not as much in control"

Female Perspectives

- Most worried about drug pressure at parties
- Alcohol and cigarettes most common; alcohol and marijuana were harder to access at school but alcohol easiest to hide

  "Alcohol is easy to get at parties…you can put it in a cup at a party but it's harder to hide cigarettes because you can see the smoke."

  "Cigarettes easy to get…marijuana is illegal so your not going to find it at school and if you're going to do it at or after school you can't really carry an alcohol bottle around all day"
- Some 7th graders use inhalants but female respondents do not feel pressure to do so

Male Perspectives

- Most worried about drug pressures in high school and about more dangerous drugs such as cocaine and marijuana

  "I think there will be more peer pressure around you; there is going to be more kids smoking"
- 7th graders find themselves in drug pressure situations because they are scared to say no especially to older people

  "I think older people because um well 7th graders would want to be like them now"
- Cigarettes and marijuana are the most commonly used substances

  "Well the thing that people do right now is marijuana and cigarettes; I know people that have done it and asked me but I just say no."

Respondents felt that drug pressure situations could occur inside and outside of the home, in unfamiliar and familiar settings, including school. Results indicated that older individuals, including older siblings, may represent a significant source of pressure for young adolescents. In general, respondents expect that drug pressure will increase as they get older and enter high school and that 7th graders feel pressure to use drugs because they want to fit in and be liked by others.

Female respondents were most worried about pressure to use drugs at parties. On the other hand, male respondents were more worried about upcoming drug pressures in high school and pressure to use drugs such as cocaine and marijuana. Females felt that alcohol and cigarettes were the most common types of drugs used by 7th graders and that marijuana would be more prevalent in high school. Male respondents, however, agreed that cigarettes and marijuana were the most common drugs used in their age group.

Table 4.4 presents overarching ideas that emerged when students were asked whether certain drug pressure situations were realistic for adolescents their age. Gender-specific findings were separated to provide comparison across subgroups. Overall, pressure to use drugs at parties was considered somewhat relevant, though some respondents felt that they would attend more parties in the future. Drug pressure at home and at a friend's home was considered realistic for some respondents. Riding in a car, however, was considered an unrealistic drug pressure situation by most of the participants.

Gender-specific differences were evident for some of the key issues. Among females, participants felt that drug offers from boyfriends or girlfriends were realistic. Outside settings were more realistic than school settings, and older siblings were

considered a possible source of drug pressure. In general, female respondents were fairly confident that their true friends would not make drug offers.

Table 4.4 Focus Group Results: Drug Pressure Situation Themes and Representative Quotes

Overall Themes

- Drug pressure at home with family members depended upon whether parents were using drugs
- Outside settings away from home (park, street, school) considered likely
- Likelihood of pressure at a friend's home may or may not be realistic
- Driving in a car considered unrealistic for 7th graders

Female Perspectives

- Divided opinions about whether drug offers at party with girl/boyfriend was realistic for 7th graders

"Maybe they'll think that their girlfriend or boyfriend won't like them anymore if they don't [accept offer]"

"No, we can't drive so we can't go on dates unless our parents drive us there"

- Drug pressure with friends at home was generally considered not realistic
  - more realistic for older sisters/brothers
  - true friends would not offer drugs
- Parks and streets, especially "where high school people go" more likely than school as realistic settings

"Yes, but you have to make sure a parent or the teacher is not around"

- Friend's home – true friend would not offer drugs unless they were hiding the fact that they use drugs

"I think it depends on the values, they might drink if they're parents don't care"

- Party with friends/siblings/cousins may or may not be unrealistic – more realistic if older siblings were at party

Male Perspectives

- Drug offers at party with girl/boyfriend was realistic for 7th graders
- School would be most likely outside setting

  "Yes, if not a lot of adults were near, like nobody"

- Friend's home – difficult to say no to friends if offered at their home because wouldn't want to lose friend

  "Some people like maybe your friend would say to you that their parents are gone so let's have beer and you wouldn't want to but you still want to be their friend so…"
- Party with friends/siblings/cousins considered realistic even with adult supervision because students could go outside and do drugs

Male participants felt that a friend's home and a party with a girlfriend or boyfriend would be a realistic drug pressure situation. Male participants generally agreed that school would be the most likely outside setting for receiving drug pressure.

Both male and female respondents named several possible strategies for resisting drug offers including confronting friends that use drugs, ignoring the offers, suggesting an alternative to a drug offer (e.g. going to the mall), changing the subject, and/or avoiding students who use drugs altogether (see Table 4.5). While some students felt confident that they could resist potential drug offers, others felt that saying "no" might be difficult. These students believed that saying "no" would not work and would be hard to say if you wanted those who were making the offer to like you, especially if they were older.

Table 4.5 Focus Groups – Themes and Representative Quotes about Strategies for Resisting Drugs

Overall Themes • Give the cold shoulder • Ignore the offer • Change the topic *"Have reasons why you don't want to do it like let's go to the mall instead"* • Leave the situation *"Say I have to go so they won't be all mad at you"* • Tell a friend and ask for help • Know what people are doing and avoid hanging out with them *"If you're friends offer just say I didn't think you were like that"* • Use a joke • Try to get source of offer to stop *"Teach the person that offered why it's bad for you"* • Only spend time with friends when not using drugs • Don't just say no *"It (saying no) doesn't work…they think if they just offer you a drink you can just say no…I mean take the drug and take it away or put it somewhere else but you just don't say no."*

These themes and impressions which surfaced during the focus group discussions were considered when revising items. Both familiar (home, school) and less familiar (outside, parties) settings were included in the scale items. The role of older friends and siblings was highlighted within scale items which reinforced the need for clarifying the source of pressure (who's offering) and varying this source across the same pressure

situation. The party situation remained, though, the role of a girlfriend or boyfriend was replaced with friend and older friend/sibling and driving in a car was removed from the scale. Overall, it was evident that 7th graders expect to face more drug pressure as they age and enter high school.

Phase 3 - Pilot Test

Item Analysis

Based on student and expert feedback, the pilot scale was developed. It included 24 self-report items worded in the following format: *How sure are you that you can refuse if [insert situation/drug] and you do not want it?* Each item included 5 response options ("not sure at all", "not very sure", "somewhat sure", "very sure", and "completely sure") with higher values reflecting more resistance self-efficacy.

Sixty students were invited to participate in the study. Of the 60, 83% (n = 50) students returned signed permission slips. The preliminary instrument was administered to a sample of 46 students in two MCPS 7th grade health education classes. Four of the 50 students (8%) who returned permission slips were absent on the day of data collection. The purpose of the pilot administration was to enable initial item analyses, to collect qualitative feedback on the format and interpretation of items, and to evaluate data collection procedures. The survey administration required about 15-20 minutes of class time; including the 10 minutes it took for students to complete the scale. No other problems with data collection procedures were identified.

Table 4.6 Item Analysis of Pilot-tested DURSE Items

Item	Stem	N	Mean (SD)	Range
Q1	friend offers you alcohol at a party	46	4.41 (0.91)	4
Q2	friend offers you a cigarette at a party	46	4.61 (0.68)	3
Q3	friend offers you marijuana at a party	45	4.76 (0.80)	4
Q4	if an older friend, brother or sister offers you alcohol at a party	45	4.27 (0.96)	3
Q5	if an older friend, brother or sister offers you a cigarette at a party	45	4.49 (0.87)	4
Q6	if an older friend, brother or sister offers you marijuana at a party	46	4.74 (0.71)	4
Q7	if a friend offers you alcohol at his/her home when no adults home	46	4.33 (1.0)	4
Q8	if a friend offers you a cigarette at his/her home when no adults home	46	4.59 (0.91)	4
Q9	if a friend offers you marijuana at his/her home when no adults home	46	4.63 (0.95)	4
Q10	if an adult (parent, aunt/uncle, neighbor) offers you alcohol at your home	46	4.00 (1.1)	3
Q11	if an adult (parent, aunt/uncle, neighbor) offers you a cigarette at your home	46	4.39 (0.98)	4
Q12	if an adult (parent, aunt/uncle, neighbor) offers you marijuana at your home	46	4.67 (0.85)	4
Q13	if a brother/sister/cousin offers you alcohol at your home when no adults home	46	4.41 (0.93)	3
Q14	if a brother/sister/cousin offers you a cigarette at your home when no adults home	46	4.50 (0.81)	3
Q15	if a brother/sister/cousin offers you marijuana at your home when no adults home	46	4.72 (0.81)	4
Q16	if a friend offers you alcohol at your home when no adults are home	45	4.56 (0.81)	3
Q17	if a friend offers you a cigarette at your home when no adults are home	46	4.61 (0.81)	4
Q18	if a friend offers you marijuana at your home when no adults are home	46	4.80 (0.72)	4
Q19	if a friend offers you alcohol outside of your home (park, field, street)	45	4.53 (0.87)	4
Q20	if a friend offers you a cigarette outside of your home (park, field, street)	45	4.64 (0.83)	4
Q21	if a friend offers you marijuana outside of your home (park, field, street)	45	4.87 (0.63)	4
Q22	if a friend offers you alcohol at school when no adults are around	45	4.67 (0.80)	4
Q23	if a friend offers you a cigarette at school when no adults are around	45	4.69 (0.90)	4
Q24	if a friend offers you marijuana at school when no adults are around	45	4.78 (0.85)	4

After administering the scale, the data were analyzed using SPSS. Item means, medians, and standard deviations were calculated (see Table 4.6). The median value for

23 of the 24 items was 5 indicating that more than 50% of the students reported "completely sure" for those items. The median value for one item (if an adult offers you alcohol at your home) was 4 meaning that more than 50% of the students reported "very sure" for that item.

Pearson product moment correlation between each item score and the total scale score were calculated (see Table 4.7). Each item was considered adequate for further testing because it correlated with other scale items and the total score at least moderately (r = .20 or greater). While inter-item correlations were adequate, the majority of item means were above 4.0 with standard deviations ≤ 1, indicating low variances and highly skewed responses.

Table 4.7 Pilot Items - Correlation Coefficients of Individual Items with Total Scale Score (N=46)

Item	Corrected Item-Total Correlation	Cronbach's Alpha if item Deleted
1	.70	.75
2	.85	.75
3	.55	.76
4	.76	.75
5	.84	.75
6	.86	.75
7	.85	.75
8	.83	.75
9	.66	.75
10	.55	.75
11	.68	.75
12	.69	.75
13	.67	.75
14	.81	.75
15	.77	.75
16	.76	.75
17	.81	.75
18	.73	.75
19	.78	.75
20	.80	.75
21	.76	.76
22	.77	.75
23	.65	.75
24	.61	.75

Qualitative Group Discussion

Following the pilot scale administration, students were asked to critique the DURSE items in an open-ended discussion. These discussions were useful in obtaining student input on the wording, content, and overall evaluation of the scale (see Table 4.8).

Table 4.8. Pilot test - Qualitative Student Feedback

Directions	• Clear directions • Clarify that questions are asking about attitudes, not knowledge
Length	• Not too long, shorter than normal "tests" • 10 minutes to finish and collect surveys
Response Options	• Very sure and completely sure are too similar – could use 100% instead of completely sure
Item Problems	• Answers would be different for different drugs (inhalants, cocaine, ecstacy, steroids, crack, chew); add grandparents to items about adult offers • Situations missing include using in bathroom, someone asks you to sell drugs • Did not leave any questions blank • A few students said that they guessed at some of the questions

Overall, students indicated that the directions were clear. Some students felt that the survey was too short and too easy when compared with other questionnaires that they had completed in school. A few students suggested additional situations for inclusion in the scale such as pressure to sell drugs and pressure to use drugs in the school bathroom, on the school bus and at the park. Students also suggested using additional types of drugs (e.g. steroids, cocaine, chew, crack, and ecstasy).

Students felt that the questions were repetitive (too easy) and suggested using different response options. As a response option, students felt that "completely sure" was confusing; the students felt that the response options "completely sure" and "very sure" were too similar. Students did not report problems with items, but emphasized that it was

too easy to pick "completely sure." During one class discussion, it became clear that there was some confusion regarding the nature of the questions. That is, some students believed that the questions were asking about knowledge, not attitudes. The facilitator had to explain to the students that these questions were asking about attitudes and feelings and that there were no right or wrong answers.

Scale Revisions

Since participants found "completely" and "very sure" to be too similar, response options were collapsed to a total of 4 options including: 1) not sure at all, 2) not very sure, 3) pretty sure, 4) definitely sure. Because some participants expressed confusion regarding the nature of the questions, the following statement was added to the directions: "Please choose the answer the best describes your honest beliefs. There are no correct answers to these questions." Other drugs were not included in the scale since this study focused on more common drugs that have received substantial support as "gateway drugs."

In summary, pilot data collected on the DURSE inventory was instructive for identifying necessary revisions before further testing of the scale. Results of the initial item analysis indicated that the items were well correlated with the total scale, though mean scores were highly skewed and unbalanced in the direction of strong resistance self-efficacy beliefs. Because pilot testing indicated low variance for all scale items, response options were reworded but not eliminated from the scale. Students' qualitative comments were used to revise the response options and directions for completing the instrument. Pilot testing also provided useful information on data collection procedures

confirming that scale administration in MCPS 7th grade health education classes was a practical data collection setting.

Phase IV. Final Scale Administration

Response Rates

Out of 60 students invited to participate in the pilot study, 50 students returned parental permission slips allowing them to participate and 46 completed the survey in May 2005. Thus, the overall response rate was 76.7%. The four students who were eligible but did not participate were absent on the day of the pilot test.

Eight 7th grade health education teachers were invited to recruit students from their health education classes in the final phase of the study. Of these, seven teachers returned completed surveys, and one decided not to administer the scale because of anticipated problems with collecting parental permission slips. The teacher did not feel that an adequate number of students would return signed parental permission slips. Seven teachers (11 MCPS 7th grade classes) participated in the final scale administration; three teachers administered the instrument in one class, and four teachers administered it in two classes. Three hundred forty-four students received parental permission slips. Of these students, 283 participated in the study resulting in a response rate of 82.3%. Overall, obtaining parental permission for student participation was not as problematic as anticipated.

Instrumentation

The final version of the DURSE scale contained 24-items. Responses to questions were combined to create a 4-point Likert scale. Each item has a 4-point *Not sure at all* (scored as 1) to *Definitely sure* (scored as 4) response format. Scale scores are obtained by summing raw scores across the scale items. Total possible scores ranged from 24 to 96, with higher scores indicating greater resistance self-efficacy. Questions were asked as follows: How sure are you that you can refuse if [insert drug offer] and you do not want it (e.g. How sure are you that you can refuse (if a friend offers you alcohol at a party and you do not want it?). A higher score indicates a greater likelihood of resisting drug offers.

The final self-report instrument included the following items: (1) demographic questions (gender, race/ethnicity, and age) (Q1-3); (2) academic performance item (Q4); (3) 3 drug intention items (Q5-7); (4) 8-item Crowne & Marlowe Social Desirability scale (Q8-15); (5) 5-item Refusal Skills (RS) scale (Q16 – 20)(Botvin, SAMSHA/CSAP, 2003); (6) 4-item Wake Forest University Drug Refusal Skills (DRS) scale (Q21–24) (Hansen, SAMSHA/CSAP, 2003); (7) 3-item family drug use scale (Q25–27); (8) 24-item DURSE scale (Q28–51) (Appendix G).

Sample Characteristics

After pilot testing and revising the preliminary scale, the final scale was administered to MCPS 7th grade students (n=283) during their health education classes. Demographic and additional sample characteristics of student participants are presented in Table 4.9. Participants were more likely to be female (58%, n = 163). Most of the

participants (73%) were 12 years old, and only one student was older than 13 years. Most students self-reported that they were either White (37%, n = 104), Black/African American (25%, n = 71), or Hispanic/Latino (18%, n = 50). Generally, the final sample included similar demographic characteristics as MCPS middle school (MCPS website, Middle School Summary, 2006). In 2003-2004, 49% of MCPS 7th graders were female and 51% were male. Racial/ethnic composition of 7th graders included African American (23%), Asian (14%), American Indian (0.3%), Hispanic (19%), and White (44%) students.

Most participants reported that their academic grades in the past year were A's (41%, n = 117) or B's (38%, n = 108). The majority of the sample reported that they would definitely not drink alcohol (78%, n = 221), smoke a cigarette (88%, n = 250), or smoke marijuana (97%, n = 273) in the next 12 months. Most participants also reported that their parent/guardian or sibling did not have a problem with alcohol (89%, n = 251), smoke cigarettes (73%, n = 207), or smoke marijuana (97%, n = 273).

Table 4.9 Characteristics of Student Respondents

Variable	% (N)
Gender (N=281)	
Female	57.8% (163)
Male	41.7% (118)
Age (N=283)	
11	16.3% (46)
12	73.1% (207)
13	10.2% (29)
14	0.4% (1)
Ethnicity (N=281)	
American Indian or Alaska Native	2.1% (6)
Asian	14.5% (41)
Black or African American	25.1% (71)
Hispanic or Latino	17.7% (50)
Native Hawaiian or Other Pacific Islander	1.8% (5)
White	36.7% (104)
Other	1.4% (4)
Academic Grades	
Mostly A's	41.3% (117)
Mostly B's	38.2% (108)
Mostly C's	12.4% (35)
Mostly D's	0.0 (0)
Mostly F's	0.0 (0)
Not Sure	8.1% (23)
Intention to Use Alcohol	
Definitely Not	78.1% (221)
Probably Not	14.8% (42)
Probably Yes	6.4% (18)
Definitely Yes	0.7% (2)
Intention to Smoke Cigarette	
Definitely Not	88.3% (250)
Probably Not	10% (29)
Probably Yes	0.7% (2)
Definitely Yes	0.7% (2)
Intention to Smoke Marijuana	
Definitely Not	96.5% (273)
Probably Not	1.4% (4)
Probably Yes	1.8% (5)
Definitely Yes	0.4% (1)
Family Alcohol Use	
None	88.7% (251)
Parent/Guardian	9.5% (27)
Sibling	1.8% (5)
Parent and Sibling	0.0 (0)
Family Cigarette Use	
None	73.1% (207)
Parent/Guardian	21.9% (62)
Sibling	3.5% (10)
Parent and Sibling	1.4% (4)
Family Marijuana Use	
None	96.5% (273)
Parent/Guardian	1.8% (5)
Sibling	1.8% (5)
Parent and Sibling	0.0 (0)

*N = 283 if otherwise not specified

Validity was examined by correlating the DURSE scores with other related constructs. The Refusal Skills scale (SAMSHA/CSAP, 2003) and Drug Refusal Skills (SAMSHA/CSAP, 2003) scale scores were used to assess whether DURSE scores captured a unique dimension of RSE beliefs among young adolescents. The Drug Use Intention items were used to assess predictive validity. A Social Desirability scale used to assess respondents' tendency to respond in a socially desirable way. Sample characteristics for measurement scales are provided in Table 4.10.

Table 4.10. Sample Characteristics for Other Scales

Scale	Number of Items	Min, Max	Mean (SD)	Median	Skewness	Cronbach's Alpha
Refusal Skills	5	5, 25	23.40 (3.83)	25	-3.427	(.93)
Drug Refusal Skills	4	5,16	14.13 (2.63)	16	-1.28	(.81)
Social Desirability	8	8, 24	16.17 (3.53)	16	-.145	(.61)
Drug Use Intentions	3	3, 12	3.50 (1.05)	3	3.42	(.60)

Refusal Skills scale scores were highly skewed towards strong beliefs about resisting drug offers with scores ranging from 5 to 25 (mean = 23.40, SD = 3.83). Drug Refusal Skills scores were also skewed towards strong beliefs about resisting drug offers and perceived difficulty when refusing drug offers with scores ranging from 5 to 16 (M = 14.13, SD = 2.63). The distribution of scores on the Social Desirability scale was normal with scores ranging from 8 to 24 (M = 16.17, SD = 3.53). Scores on the Drug Use Intention Scale were highly positively skewed with scores ranging from 3 to 12 (M = 3.50, SD = 1.05). Most students reported that they would definitely not try alcohol, cigarettes, or marijuana in the next 12 months.

Item Analysis

DURSE item scores ranged from a minimum of 1 to a maximum of 4. Table 4.11 presents DURSE item means and standard deviations. Item scores were negatively skewed towards high resistance self-efficacy beliefs. Most students answered "Definitely sure" to DURSE items. The mean total DURSE score was 88.10 (SD = 15.30). The scores ranged from a minimum of 24 to a maximum of 96. Thus, the mean score on the instrument was over 1 standard deviation above the midpoint (60), indicating a very negative skew in the students' drug pressure resistance self-efficacy.

Those items that had the highest means were those that dealt with pressure to use marijuana (items 17-24). Those items with the lowest means dealt with pressure to use alcohol from a friend or older friend/sibling (items 1 and 2). These results show that respondents self-reported the lowest RSE beliefs about resisting alcohol in certain situations and stronger RSE beliefs about resisting pressure to use marijuana in all pressure situations.

Based on item analyses, most respondents answered the DURSE items similarly, and thus, the items were highly skewed and limited in variability. Multivariate normality assumes that all indicators and all linear combinations of these indicators are normally distributed (Grimm & Yarnold, 1995). While multivariate normality is a strict assumption for certain factor analytic methods (e.g. maximum likelihood), principal component analysis using least squares method, does not require this assumption. It should be noted, however, that factor analytic methods are more likely to yield clearer, more replicable factor patterns with data that meet multivariate normality (Floyd & Widaman, 1995). Thus, the following results should be interpreted in consideration of this limitation.

Table 4.11 DURSE : Response Means and Standard Deviations

	Item	Item Mean (SD)	Missing
Q1	if a friend offers you alcohol at a party	3.49 (.87)	4
Q2	if an older friend, brother or sister offers you alcohol at a party	3.39 (.91)	4
Q3	if a friend offers you alcohol at his/her home when no adults are home	3.57 (.84)	9
Q4	if an adult (parent, aunt/uncle, neighbor) offers you alcohol in your home	3.55 (.87)	5
Q5	if a brother/sister/cousin offers you alcohol in your home when no adults are home	3.55 (.90)	5
Q6	if a friend offers you alcohol in your home when no adults are home	3.60 (.87)	5
Q7	if a friend offers you alcohol outside of your home (park, field, street)	3.64 (.80)	5
Q8	if a friend offers you alcohol at school when no adults are around	3.70 (.75)	5
Q9	if a friend offers you a cigarette at a party	3.68 (.76)	5
Q10	if an older friend, brother or sister offers you a cigarette at a party	3.67 (.72)	5
Q11	if a friend offers you a cigarette at his/her home when no adults are home	3.68 (.75)	6
Q12	if an adult (parent, aunt/uncle, neighbor) offers you a cigarette in your home	3.70 (.72)	5
Q13	if a brother/sister/cousin offers you a cigarette in your home when no adults home	3.66 (.77)	5
Q14	if a friend offers you a cigarette in your home when no adults are home	3.70 (.76)	7
Q15	if a friend offers you a cigarette outside of your home (park, field, street)	3.70 (.75)	7
Q16	if a friend offers you a cigarette at school when no adults are around	3.76 (.68)	8
Q17	if a friend offers you marijuana at a party	3.75 (.71)	7
Q18	if an older friend, brother or sister offers you marijuana at a party	3.75 (.69)	6
Q19	if a friend offers you marijuana at his/her home when no adults are home	3.76 (.67)	6
Q20	if an adult (parent, aunt/uncle, neighbor) offers you marijuana in your home	3.75 (.72)	6
Q21	if a brother/sister/cousin offers you marijuana in your home when no adults are home	3.74 (.71)	7
Q22	if a friend offers you marijuana in your home when no adults are home	3.76 (.70)	8
Q23	if a friend offers you marijuana outside of your home (park, field, street)	3.76 (.70)	7
Q24	if a friend offers you marijuana at school when no adults are around	3.79 (.68)	7

**Responses were scored as follows: not sure at all = 1, not very sure = 2, pretty sure = 3, definitely sure = 4.

Research Questions and Hypotheses

Research Question 1: What is the underlying factor structure of drug use resistance self-efficacy (RSE) beliefs among young adolescents?

1a. Do DURSE items represent a common underlying dimension or separate drug-specific dimensions of RSE beliefs among adolescents?

Correlation matrix

Correlations among the 24 DURSE items are displayed in Table 4.12. Correlations were examined to assess the degree of intercorrelation between variables. DURSE items were highly intercorrelated. Multicollinearity is indicated by highly correlated variables (.90 and above). Multicollinearity was tested using the determinant of the correlation matrix calculated using SPSS. The determinant (1.21E-017) was not greater than 0.00001 indicating extreme multicollinarity (Field, 2005), particularly among the set of marijuana items. Despite potential limitations of collinear variables, all items were included in the first round of factor analysis because this study was exploratory in nature.

Table 4.12 Correlation Matrix of the DURSE Scale Items

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	-	.79	.70	.65	.75	.74	.74	.66	.64	.64	.64	.54	.60	.58	.61	.52	.54	.54	.56	.46	.51	.56	.51	51
2		-	.74	.73	.84	.76	.76	.76.	.64	.71	.65	.67	.71	.64	.60	.62	.59	.63	.62	.57	.63	.62	.57	.58
3			-	.68	.69	.78	.72	.68	.62	.62	.70	.58	.65	.60	.62	.57	.56	.56	.58	.54	.51	.59	.53	.56
4				-	.72	.72	.67	.70	.55	.61	.62	.64	.60	.58	.56	.62	.59	.61	.58	.58	.61	.61	.56	.59
5					-	.79	.78	.78	.67	.70	.66	.68	.77	.62	.63	.64	.58	.63	.66	.60	.63	.64	.60	.62
6						-	.83	.83	.69	.71	.72	.70	.74	.71	.69	.69	.68	.70	.69	.66	.67	.72	.67	.66
7							-	.87	.79	.78	.76	.74	.75	.72	.76	.71	.64	.68	.68	.63	.65	.69	.68	.67
8								-	.77	.79	.76	.81	.79	.74	.69	.77	.69	.72	.71	.67	.71	.73	.68	.70
9									-	.89	.80	.81	.81	.80	.80	.68	.61	.60	.64	.58	.63	.59	.61	.57
10										-	.80	.86	.86	.80	.76	.75	.63	.67	.66	.63	.67	.65	.61	.62
11											-	.74	.77	.84	.85	.80	.72	.74	.77	.71	.66	.78	.71	.74
12												-	.84	.73	.64	.73	.60	.66	.66	.68	.66	.64	.63	.63
13													-	.78	.70	.75	.67	.67	.70	.70	.72	.69	.65	.64
14														-	.86	.80	.72	.73	.78	.74	.70	.76	.69	.68
15															-	.82	.76	.74	.76	.74	.70	.72	.75	.74
16																-	.79	.82	.82	.82	.78	.79	.78	.85
17																	-	.94	.89	.88	.85	.82	.88	.82
18																		-	.91	.90	.87	.87	.89	.87
19																			-	.88	.80	.91	.87	.89
20																				-	.84	.82	.87	.84
21																					-	.82	.86	.86
22																						-	.89	.92
23																							-	.90
24																								-

Initial Factor Analysis

To determine the number of factors underlying the DURSE scale, an exploratory factor analysis was conducted using principal components analysis (PCA). According to Field (2005), a sample is considered adequate if the Kaiser-Meyer-Olkin (KMO) statistic is greater than .5. The KMO measure of sampling adequacy for this analysis was .938, which indicated an acceptable level of sampling adequacy. Table 4.13 presents initial and extracted communalities. Extracted communalities represent the percent of variance in a given item explained by the extracted factors. With no factors dropped, initial communalities equal 1.0 or explain 100% of the variance. Extracted communalities indicated how well the factor structure worked for each item (i.e. how much of the original variable's variance is explained by the factor structure). High extracted communalities (above .5) indicated that the factor structure explained over half of the original variable's variance.

Exploratory Factor Structure

The number of factors to be retained was determined by a convergence of criteria including eigenvalues > 1 (Kaiser, 1960), the scree plot level point, and theoretical interpretability of the resulting factor structure. As shown in Table 4.14 and Figure 4.1, three factors emerged, and the three-factor solution appeared to be adequate based on the variance accounted for (83.3 %) and eigenvalues greater than one rule. The third factor, however, had an eigenvalue of only 1.012 and only accounted for 4.2% of variance. Cattell's scree plot of the eigenvalues indicated that the inclusion of three or more factors would add very little variance to the solution (Figure 4.1).

Table 4.13 Initial EFA Results – Initial and Extracted Communalities

Item	Initial	Extracted
Alcohol		
1	1.000	.771
2	1.000	.840
3	1.000	.733
4	1.000	.716
5	1.000	.817
6	1.000	.830
7	1.000	.828
8	1.000	.816
Cigarettes		
9	1.000	.898
10	1.000	.902
11	1.000	.821
12	1.000	.797
13	1.000	.827
14	1.000	.835
15	1.000	.792
16	1.000	.831
Marijuana		
17	1.000	.878
18	1.000	.923
19	1.000	.901
20	1.000	.874
21	1.000	.827
22	1.000	.875
23	1.000	.897
24	1.000	.899

Figure 4.1 presents the scree test (plot of the eigenvalues associated with successive factors) (Cattell, 1966) for the initial Exploratory Factor Analysis. As supported by the previous results, the plot shows a drop in eigenvalue magnitude after the first factor, and approaches 0 after the second factor. All of the items in the third factor related to cigarettes, which corresponded with the theoretical drug-specific dimensions, and thus, the 3-factor solution was examined further.

Table 4.14 Exploratory Factor Analysis of DURSE scale - Eigenvalues, Percentage of Variance Accounted for by the Unrotated Factors

Factor	Eigenvalue	% of Variance	Cumulative %
Marijuana	17.21	71.72	71.72
Alcohol	1.90	7.936	79.65
Cigarettes	1.0	4.215	83.87
4	.616	2.567	
5	.428	1.782	
6	.361	1.503	
7	.314	1.308	
8	.303	1.262	
9	.282	1.173	
10	.238	.991	
11	.217	.905	
12	.207	.861	
13	.178	.742	
14	.149	.620	
15	.121	.503	
16	.119	.495	
17	.105	.438	
18	.089	.370	
19	.066	.275	
20	.065	.270	
21	.052	.217	
22	.038	.159	
23	.031	.130	
24	.027	.112	

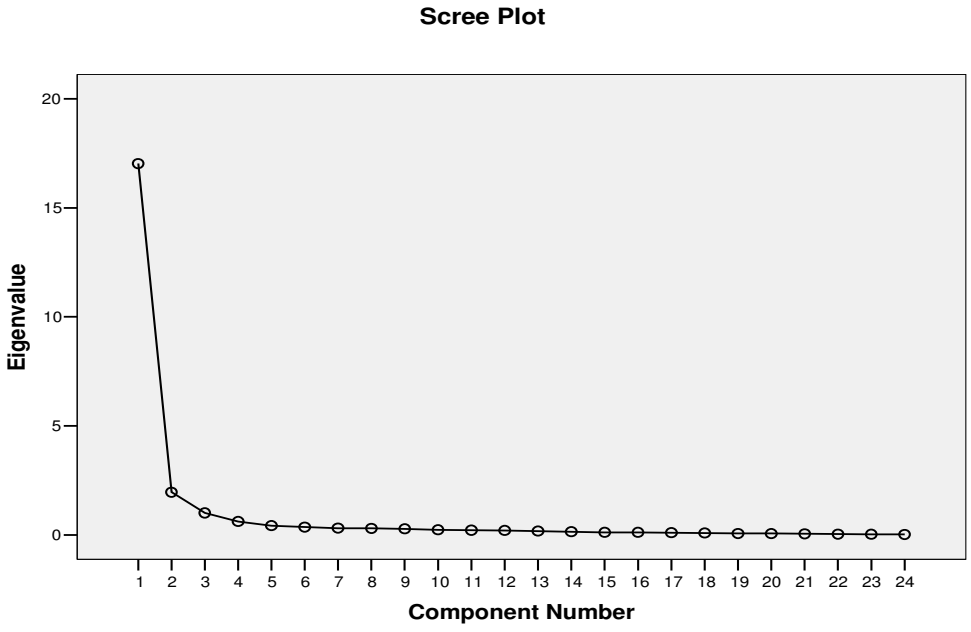

Figure 4.1. Initial Scree plot

Factor Rotation

For this exploratory study, orthogonal (Varimax) and oblique (Direct Oblimin) rotation methods were applied to the data. Oblique rotation methods allow factors to be correlated, while orthogonal rotation keeps factors uncorrelated . It was hypothesized that the DURSE factors would be correlated since items were highly correlated, and therefore oblique rotation was initially applied to the data. The oblique rotations resulted in a solution similar to orthogonal factors yet slightly less interpretable. Thus, the commonly used orthogonal rotation procedure, Varimax, was interpreted and presented below. The Varimax method of factor rotation has proved very successful as an analytic approach to obtaining an orthogonal rotation of factors (Nunnally, 1978). Table 4.15 presents the factor solution with factor loadings of the rotated component matrix of the DURSE items.

Items with the strongest factor loadings on Factor 1 related to pressure to use marijuana and accounted for 34% of the variance after rotation. Items with the strongest loadings on Factor 2 related to pressure to use alcohol and accounted for 25% of the variance. Items with the strongest loadings on Factor 3 related to pressure to smoke cigarettes and accounted for 24% of the variance. Half of the cigarette items, however, had close to equal loadings on more than 1 factor. The final rotated solution accounted for 83.3% of the total variance (Table 4.16).

Table 4.15 Factor Structure of the DURSE – Rotated Factor Loadings using Varimax (orthogonal) Procedures

Item	Factor		
	1	2	3
Factor 1: Marijuana			
Friend party	**.838**	.296	.284
Older friend/sibling party	**.857**	.319	.292
Friend's home	**.826**	.317	.333
Adult at your home	**.836**	.244	.328
Sibling/cousin at your home	**.786**	.313	.322
Friend your home	**.808**	.368	.281
Outside	**.860**	.279	.269
School	**.855**	.312	.251
Factor 2: Alcohol			
Friend party	.210	**.799**	.299
Older friend/sibling party	.295	**.802**	.333
Friend's home	.310	**.733**	.346
Adult at your home	.372	**.717**	.220
Sibling/cousin at your home	.329	**.753**	.371
Friend your home	.409	**.720**	.377
Outside	*.362*	*.621*	*.550*
School	*.426*	*.558*	*.564*
Factor 3: Cigarette			
Friend party	.251	.378	**.828**
Older friend/sibling party	.303	.414	**.798**
Friend's home	*.493*	*.390*	*.645*
Adult at your home	.339	.394	**.717**
Sibling/cousin at your home	.373	.452	**.692**
Friend your home	*.507*	*.289*	*.697*
Outside	*.553*	*.294*	*.624*
School	*.682*	*.283*	*.524*

Table 4.16 Variance Explained by Factors after Rotation

Component	Total	% Variance	Cumulative %
1	8.195	34.14	34.14
2	5.95	24.795	58.94
3	5.85	24.376	83.32

Rotated Factor Loadings

In Exploratory Factor Analysis, factor loadings are generally considered meaningful when they exceed .30 or .40. For example, a factor loading of .32 means that the item and the eigenvector (factor) share $(.32)^2$ x 100% or about 10% of their variance (Bryant & Yarnold, 1995). An item "crossloads" when it loads at .32 or higher on two or

more factors (Costello & Osborne, 2005). To determine whether items should be retained for inclusion and interpretation of the factor, the proposed criteria was used (i.e. loadings greater than .5 on factor and no greater than .3 on other factor). Using this decision rule, several items cross-loaded (> .30) on two or more factors. Overall, however, most items clearly tapped one factor (loading greater than .7). Thus, an adjustment to the proposed criteria to address cross-loadings.

Because this study was exploratory in nature and items were highly intercorrelated, an alternate, less conservative, criterion was also applied. Items were considered to load on a factor if they had a factor loading of at least .5 and differences of at least .2 on all nondominant factors (DiIorio et al., 2004). That is, items with factor loadings of .5 or greater were only retained if loadings on other factors were .2 less than the strongest factor. For example, if an item's factor loading was .35 on Factor 1 and .6 on Factor 2, it was retained for Factor 2 because it was at least .2 greater than .35 (.55).

Using these criteria, all of the marijuana items were included in Factor 1. Six of the alcohol items loaded on Factor 2 and 5 cigarette items loaded on Factor 3. Though the factor loading patterns were not clean (>.5 and <.3 on one factor), results provided some evidence of drug-specific factors. Items with strong factor loadings on Factor 2 related to pressure to use alcohol at parties and at home. Items with strong factor loadings on Factor 3 included items related to pressure to use cigarettes at parties and at home. The following 6 items were excluded from the factors because their factor loading did not meet the criteria described above: alcohol from friend outside, alcohol from friend at school, cigarette at friend's home, cigarette at your home, cigarette outside, cigarette at school.

Second Factor Analysis

Based on results from the initial factor analysis and an examination of the original correlation matrix, a number of items were removed from the second round of analysis. While somewhat highly correlated variables ("mild multicollinearity") may not be a problem for PCA, researchers recommend avoiding extreme mulitcollineariy (very highly correlated variables) (Field, 2005). To decrease potential problems with mutlicollinearity, marijuana items with more than one correlation higher than 0.9 were deleted. Four marijuana items ("older friend/sibling at a party", "friend/your home," friend's home," and "school") met these criteria. After deleting these variables, the remaining marijuana variables correlated less than .9 with other variables though remained highly correlated (> .80).

Two alcohol items ("school" and "outside") and 4 cigarette items ("friend/your home", "friend's home", "school", and "outside") were eliminated because they had close to equal loadings on more than one factor in the original factor solution. Factor analytic procedures, as described previously, were recomputed on the remaining subset of 14 items.

Table 4.17 presents initial and extracted communalities. The communalities for all 14 items were above .50, some as high as .80, indicating that the factor structure explains over half of the original variable's variance.

Table 4.17 Subsequent EFA Results – Initial and Extracted Communalities

Item	Initial	Extracted
Alcohol		
1	1.000	.747
2	1.000	.817
3	1.000	.711
4	1.000	.657
5	1.000	.801
6	1.000	.800
Cigarettes		
7	1.000	.709
8	1.000	.768
9	1.000	.721
10	1.000	.785
Marijuana		
11	1.000	.872
12	1.000	.868
13	1.000	.894
14	1.000	.883

As shown in Table 4.18, two factors emerged in the Exploratory Factor Analysis. Factor 1 had an eigenvalue of 9.76 and explained almost 70% of the variance. Factor 2 had an eigenvalue of 1.27 and explained 9% of the variance. Thus, the factor solution accounted for almost 79% of the overall variance. The two-factor solution appeared to be adequate based on Kaiser's stopping rule of eigenvalues greater than 1 and Cattell's scree plot (Figure 2).

Table 4.18 Subsequent EFA - Eigenvalues, Percentage of Variance accounted for by the Unrotated Factors

Factor	Eigenvalue	% of Variance	Cumulative %
1	9.760	69.72	69.72
2	1.274	9.097	78.81
3	.844	6.028	
4	.405	2.891	
5	.363	2.596	
6	.287	2.048	
7	.211	1.506	
8	.169	1.210	
9	.159	1.139	
10	.155	0.104	
11	.121	0.866	
12	.093	0.663	
13	. 083	0.593	
14	..076	0.545	

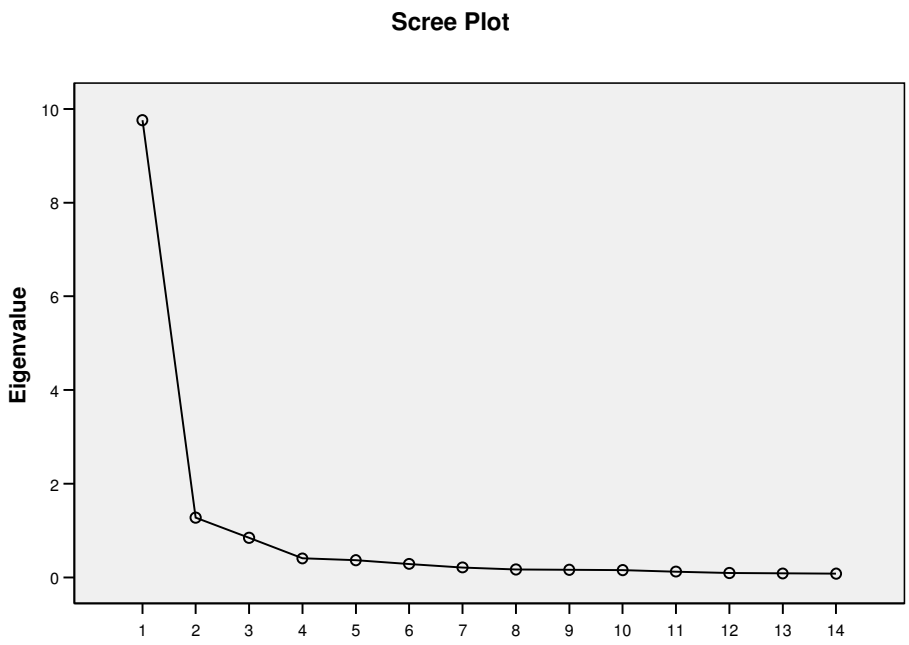

Figure 4.2. Subsequent Scree Plot

Orthogonal (Varimax) rotation was next applied to the data. Table 4.19 describes the variance explained by factors after rotation. The final rotated solution accounted for 78% of the total variance.

Table 4.19 Variance explained by factors after rotation

	Total	% Variance	Cumulative %
Component			
1	6.255	44.679	44.679
2	4.778	34.132	78.811

Items were considered to load on a factor if the item had a loading of at least .5 and differences of at least .2 on all nondominant factors. By these criteria, 2 cigarette items ("Cigarette offer from adult at home" and "Cigarette offer from sibling/cousin at

home") were removed. Twelve items remained: 6 alcohol and 2 cigarette on the first factor, and 4 marijuana items on the second factor (see Table 4.20).

Table 4.20 Factor structure of the DURSE – Rotated Factor Loadings

Item	Factor	
	1	2
Factor 1: Alcohol & Cigarettes		
Alcohol Friend Party	**.840**	.201
Alcohol Older Frnd/Sibling Party	**.849**	.310
Alcohol Friend's home	**.799**	.269
Alcohol Adult your home	**.726**	.361
Alcohol Sibling/cousin your home	**.823**	.351
Alcohol Friend your home	**.770**	.455
Cigarette Friend party	**.699**	.470
Cigarette Older Frnd/Sibling party	**.721**	.498
Cigarette Adult your home	*.653*	*.542*
Cigarette Sibling/cousin your home	*.691*	*.555*
Factor 2: Marijuana		
Friend party	.350	**.866**
Sibling/cousin your home	.378	**.852**
Adult your home	.329	**.886**
Outside	.326	**.881**

The first factor was labeled *alcohol and cigarette RSE*, and the second factor was labeled *marijuana RSE.* The variance explained by each factor, after rotation, was 44% for factor 1 and 34% for factor 2. Factor scores (i.e. subscales) were computed and scores for the two factors were combined to create an overall drug use resistance self-efficacy scale.

Specifically, six items retained on the *alcohol/cigarette RSE factor* asked respondents to report RSE beliefs about resisting alcohol offers from friends, siblings, and family members in party and home settings. Two items asked respondents to report RSE beliefs about resisting cigarettes from a friend at a party and from an older friend or sibling at a party. The final four *Marijuana RSE* items asked respondents to report RSE beliefs about resisting marijuana offers from a friend at a party, from a sibling or cousin at home, from an adult at home, and from a friend in an outside setting. A description of

the DURSE scale including administrative issues, instructions, and scoring information is presented in Table 4.21. The 24 DURSE scale items and response format is presented in Table 4.22.

Table 4.21 Drug Use Resistance Self-Efficacy (DURSE) Scale for Young Adolescents – Description and Scoring Information

Brief Description	This self-efficacy scale describes situations in which adolescents are likely to receive offers to use alcohol, cigarettes, and marijuana. The 12-item scale was based on the original 24-item version that requires future testing. This paper and pencil self-report measure uses a 4-point Likert scale (1 = Not sure at all to 4 = Definitely sure) to rate responses to each situation.
Target Population	Initial testing on a school sample of seventh grade students from a suburban school district.
Administrative Issues	Self-administered, paper and pencil instrument.
Instructions for administrators	****Please read this information to students before passing out the surveys**** Thank you for helping us with this survey. It has been developed so you can tell us what you may do in drug pressure situations. The information you give will be used to develop better health education for young people like yourself. Please **DO NOT** put your name on the survey. You can mark your answers directly on the survey. You do not have to answer any questions you do not want to answer and can stop participating at any time. Make sure to read every question. If you have questions about any of the survey items, you may raise your hand and ask the teacher. If he/she cannot answer your question, please make the best possible choice or leave the answer blank. The questions that ask about your background will be used only to describe the types of students completing this survey. The information will not be used to find out your name. **No names** will ever be reported. You will **NOT** be graded on your answers and your answers will be completely anonymous because your name will not be on the survey. Once you have completed the questionnaire, put your pencil down and sit quietly at your desk. After everyone has completed the survey, we will collect the questionnaire.
Scoring Information	Scores are obtained by summing raw scores across the items on the scale. A higher score indicates a greater likelihood of resisting drug offers.

Table 4.22. Drug Use Resistance Self-Efficacy (DURSE) Scale

Directions: The next several questions ask about resisting offers to use alcohol, cigarettes, and marijuana (pot) in different situations. Please choose the answer that best describes your honest beliefs. There are no correct answers to these questions.

Response Format – (insert under each question)

a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

ALCOHOL

How sure are you that you can refuse if a friend offers you alcohol at a party and you do not want it?

How sure are you that you can refuse if an older friend, brother or sister offers you alcohol at a party and you do not want it?

How sure are you that you can refuse if a friend offers you alcohol at his/her home when no adults are home and you do not want it?

How sure are you that you can refuse if an adult (parent, aunt/uncle, neighbor) offers you alcohol at your home and you do not want it?

How sure are you that you can refuse if a brother, sister or cousin offers you alcohol at your home when no adults are home and you do not want it?

How sure are you that you can refuse if a friend offers you alcohol at your home when no adults are home and you do not want it?

How sure are you that you can refuse if a friend offers you alcohol outside of your home (at a park, field, street) and you do not want it?

How sure are you that you can refuse if a friend offers you alcohol at school when no adults are around and you do not want it?

CIGARETTES

How sure are you that you can refuse if a friend offers you a cigarette at a party and you do not want it?

How sure are you that you can refuse if an older friend, brother or sister offers you a cigarette at a party and you do not want it?

How sure are you that you can refuse if a friend offers you a cigarette at his/her home when no adults are home and you do not want it?

How sure are you that you can refuse if an adult (parent, aunt/uncle, neighbor) offers you a cigarette at your home and you do not want it?

How sure are you that you can refuse if a brother, sister, or cousin offers you a cigarette at your home when no adults are home and you do not want it?

How sure are you that you can refuse if a friend offers you a cigarette at your home when no adults are home and you do not want it?

How sure are you that you can refuse if a friend offers you a cigarette outside of your home (at a park, field, street) and you do not want it?

How sure are you that you can refuse if a friend offers you a cigarette at school when no adults are around and you do not want it?

MARIJUANA
How sure are you that you can refuse if a friend offers you marijuana at a party and you do not want it?
How sure are you that you can refuse if an older friend, brother or sister offers you marijuana at a party and you do not want it?
How sure are you that you can refuse if a friend offers you marijuana at his/her home when no adults are home and you do not want it?
How sure are you that you can refuse if an adult (parent, aunt/uncle, neighbor) offers you marijuana at your home and you do not want it?
How sure are you that you can refuse if a brother, sister, or cousin offers you marijuana at your home when no adults are home and you do not want it?
How sure are you that you can refuse if a friend offers you marijuana at your home when no adults are home and you do not want it?
How sure are you that you can refuse if a friend offers you marijuana outside of your home (at a park, field, street) and you do not want it?
How sure are you that you can refuse if a friend offers you marijuana at school when no adults are around and you do not want it?
Bolded text = 12 items used in the current study to test research questions.

Gender Differences in Factor Structure

While not part of the original research questions, some interesting differences emerged by gender. The final factor solution was tested separately among male and female participants. Extracted communalities were high (between .6 and .9) for both groups. The two-factor factor solution was largely consistent with the final solution for both groups (see Table 4.23). Factor 1 included *alcohol/cigarette RSE* items and Factor 2 included *marijuana RSE* items. One item, "sibling offer to use cigarettes at home" loaded more strongly on Factor 1 among females and loaded evenly on both factors among males but which was consistent with the overall solution. The final factor solution explained 77% and 81% of variance for females and males, respectively.

Table 4.23. Factor structure of the DURSE- Gender Differences

Items	Females		Males	
	Component			
	1	2	1	2
Factor 1: Alcohol/Cigarette DURSE Items				
Alcohol Friend Party	**.827**	.129	**.857**	.269
Alcohol Older Friend/Sibling Party	**.821**	.353	**.879**	.241
Alcohol Friend's home	**.768**	.318	**.836**	.299
Alcohol Adult your home	**.649**	.430	**.792**	.271
Alcohol Sibling/cousin your home	**.804**	.429	**.843**	.228
Alcohol Friend your home	**.731**	.471	**.797**	.445
Cigarette Friend party	**.732**	.369	**.719**	.516
Cigarette Older Friend/Sibling party	**.761**	.431	**.723**	.500
Cigarette Adult Home	***.633***	*.552*	***.701***	*.476*
Cigarette Sibling/cousin your home	**.728**	.489	***.673***	*.590*
Factor 2: Marijuana DURSE Items				
Friend party	.321	**.892**	.367	**.869**
Sibling/cousin your home	.391	**.887**	.348	**.841**
Adult your home	.359	**.877**	.259	**.889**
Outside	.341	**.843**	.285	**.923**

Mean factor scores were compared in which gender served as the independent variable. Participants' DURSE scores did not differ significantly by gender (Table 4.24).

Table 4.24 T-test for Equality of Factor Score Means By Gender

DURSE Factor	Group Females (N = 163) Male (N = 118)	Mean (SD)	t
Alcohol/Cigarettes	Females	-.0241 (0.95)	-.611*
	Males	.0497 (1.06)	
Marijuana	Females	-.0067 (1.01)	-.511*
	Males	-.0532 (0.922)	

*Not significant

Scale Characteristics

Reliability

To assess reliability, Cronbach's alpha was computed for the two DURSE subscales and the total scale score (12 items). Subscale and total scale descriptive statistics for this sample are presented in Table 4.25.

Table 4.25 Reliability of DURSE Total Scale and Subscales

Scale	Number of Items	Cronbach's Alpha	Mean (SD)	Range (min, max)	Skewness	Median
Alcohol /Cigarettes	8	.95	28.64 (5.77)	24 (8,32)	-2.025	32
Marijuana	4	.96	15.02 (2.66)	12 (4,16)	-3.077	16
Total Score	12	.96	43.65 (7.90)	39 (12, 48)	-2.305	48

Reliability was extremely high for all factors indicating potentially redundant items. The two factors were labeled as follows: (1) Alcohol and Cigarette Use Resistance Self-Efficacy ($\alpha = .95$), and (2) Marijuana Use Resistance Self-Efficacy ($\alpha = .96$). The estimate of the internal consistency reliability (coefficient alpha) for the DURSE total scale score for the current sample was .96. Both subscales and the total scales exhibited strong negative skews. Thus, the median was a better indicator of typical scores on the subscales and total scale scores. Over half of the participants (148, 52%) reported "definitely sure" for all of the alcohol/cigarette items, and the majority of participants (228, 81%) reported "definitely sure" for all of the marijuana items. Internal consistency reliability for the DURSE total scale score (.96) did not differ across gender.

Evaluation of Subscale Structure

Table 4.26 shows the Pearson correlation coefficients of the subscales with each other and the total score.

Table 4.26 Pearson Correlation Coefficients for Subscales of DURSE scale (N = 283)

Subscale	Alcohol/Cigarette	Marijuana
Alcohol/Cigarette	-	.72*
Marijuana	.72*	-
Total DURSE scale	.97*	.86*
* Sign, P < 0.01		

Evidence of independent underlying factors would include subscales that show moderate correlations with total scores and smaller correlations with other subscales (Clark & Watson, 1995). Yet, the remaining two DURSE subscales, *alcohol/cigarettes and marijuana*, had high correlations with each other and even higher correlations with the total scale, suggesting that these scales were not tapping different dimensions. Item-to-total correlations and item to subscale correlations also failed to fit an acceptable pattern, most items being close to or as highly correlated with the total scale as with their own subscale.

Exploratory Factor Analysis provided preliminary evidence that the DURSE scale may adequately tap drug-specific dimensions. However, further evaluation of subscales did not warrant a strong justification for dividing items into discrete subscales for use in testing the remaining research questions. Thus, the subscales were combined in favor of a single overall score.

Demographic Differences

A few demographic analyses were undertaken to better understand the results. DURSE scores were compared across gender and ethnic categories using a t-test for independent groups (gender) and an analysis of variance (ethnicity). Mean DURSE scores were compared in which gender served as the independent variable. Female students (N = 163) did not have significantly different DURSE scores (M = 47.14, SD = 8.43) than male students (N = 118) (M = 47.95, SD = 8.28), t (-.793) (Table 4.27).

Table 4.27 Mean DURSE Scores By Gender

	N	Mean (SD)	t
Females	163	43.44 (7.86)	-.884
Males	118	44.26 (7.57)	

A one-way analysis of variance showed that DURSE scores were significantly different across ethnic groups, F (5,271) = 2.898, p = .014. Post hoc analyses using the Tukey HSD post hoc criterion for significance indicated that DURSE scores were significantly lower among Hispanic/Latino students (M = 43.9, SD = 12.3) than White students (M = 48.94, SD = 6.35). Table 4.28 shows Post-hoc multiple comparisons indicating significant differences between White participants and Hispanic/Latino participants.

Table 4.28 Mean DURSE Scores Across Ethnic Categories: ANOVA Post-hoc multiple comparisons

Ethnicity (n=277)	N	Mean (SD)
White	104	45.2 (5.81)*
Native Hawaiian/Pacific Islander	5	42.4 (5.27)
Hispanic/ Latino	50	40.36 (11.44)*
Black/African American	71	42.9 (8.62)
Asian	41	44.6 (5.64)
American Indian/Alaska Native	6	45.0 (5.48)
Sign, $p < 0.05$*		

DURSE scores were not significantly correlated with age (r = -.67). The direction of the correlation, however, indicates a trend for younger participants to report higher levels of resistance self-efficacy beliefs.

Research Question 2: Are resistance self-efficacy beliefs related to measures of other constructs?

Demographic data and additional outcome measures were included with the DURSE scale in the final instrument to allow an initial evaluation of the construct validity of the scale. DURSE scale scores were correlated with additional measures to assess the association between RSE beliefs and reported academic performance, family drug use, drug use intentions, and social desirability.

Hypothesis 2a. Higher levels of drug use resistance self-efficacy will be associated with higher reports of academic grades among adolescents.

Based on previous research, it was expected that higher academic grades would be associated with higher levels of drug use resistance self-efficacy. DURSE scores were significantly correlated ($r(283) = .147$, $p < .05$) with reported academic grades indicating that participants who reported higher RSE beliefs also reported higher academic grades (Table 4.28).

Hypothesis 2b. Higher levels of drug use resistance self-efficacy will be associated with lower reports of intentions to use drugs among adolescents.

Behavioral intention (intention to use alcohol, cigarettes or marijuana in next 12 months) was used as a proxy for future drug use behavior. It was hypothesized that adolescents' resistance self-efficacy beliefs would be negatively correlated with reported drug intentions. Total DURSE scores were negatively correlated with future intentions as measured by intention to use alcohol, marijuana, and cigarettes in the next 12 months. As hypothesized, higher RSE beliefs ($r(283) = -.329$, $p < .01$) were significantly associated with lower self-reported intentions to use drugs in the next year (Table 4.28).

Hypothesis 2c. Higher levels of resistance self-efficacy will be associated with lower reports of family drug use among adolescents.

The family use scale included 3 items that asked about family drug use (Do any of your family members (parent or guardian, brother/sister) have a problem with [insert drug]?). Before Pearson correlations were computed, these items were recoded to create a total family use scale (higher scores indicated more family problems with drugs). Higher RSE beliefs were negatively associated with reported family drug use ($r(283) = -.060$, ns) though the relationship was not significant (Table 4.29).

Table 4.29. Correlations among the DURSE Scale and Other Measures

Outcome Variable	DURSE
Academic Grades	.147*
Drug Use Intentions	-.329**
Family Drug Use	-.060

*p < .05, **p < .01

Research Question 3*:* Are DURSE items significantly influenced by social desirability among young adolescents?

The short form of the Crowne & Marlowe (1964) Social Desirability scale was included to measure the association between the DURSE and the need for social approval and tendency to respond in a socially desirable way. This scale consists of 8 items and yields a score from 8 to 24, with higher scores indicating greater social desirability. The DURSE scale was significantly correlated with the social desirability scale ($r(283) = .197$, $p < .01$) indicating that students may have responded to DURSE items in a socially desirable way.

Research Question 4: Does the DURSE instrument capture different aspects of resistance self-efficacy beliefs among young adolescents that differ from related measures of resistance self-efficacy?

Hypothesis 4. DURSE scale items will load strongly on one factor and Drug Refusal Skills and Refusal Skills scale items will load highly on other factors.

To examine whether DURSE items captured different aspects of resistance self-efficacy beliefs among young adolescents, compared to related measures of resistance self-efficacy, the final 12 DURSE items, 5 RS items, and 4 DRS items were subjected to a joint factor analysis that was computed using Principal Component Analysis (PCA). Table 4.30 presents initial and extracted communalities. The communalities for all items are above .50 indicating that the factor structure explains over half of the original variable's variance.

Table 4.30. Initial and Extracted Communalities – Joint EFA

Item	Initial	Extracted
DURSE		
1	1.000	.771
2	1.000	.823
3	1.000	.736
4	1.000	.704
5	1.000	.792
6	1.000	.824
7	1.000	.675
8	1.000	.716
9	1.000	.887
10	1.000	.868
11	1.000	.885
12	1.000	.892
Refusal Skills		
25	1.000	.795
26	1.000	.769
27	1.000	.888
28	1.000	.894
29	1.000	.743
Drug Refusal Skills		
30	1.000	.750
31	1.000	.585
32	1.000	.713
33	1.000	.594

As shown in Table 4.31, four factors emerged in exploratory factor analysis. The four-factor solution appeared to be adequate based on the variance accounted for (77.63 %) and eigenvalues greater than one, though, the fourth factor, eigenvalue (1.18) only accounted for 5.6% of the variance.

Table 4.31. Eigenvalues, Percentage of Variance accounted for by the Unrotated Factors – Joint EFA

Factor	Eigenvalue	% of Variance	Cumulative %
1	10.28	48.966	48.97
2	3.10	14.559	63.52
3	1.78	8.494	72.02
4	1.18	5.614	77.63

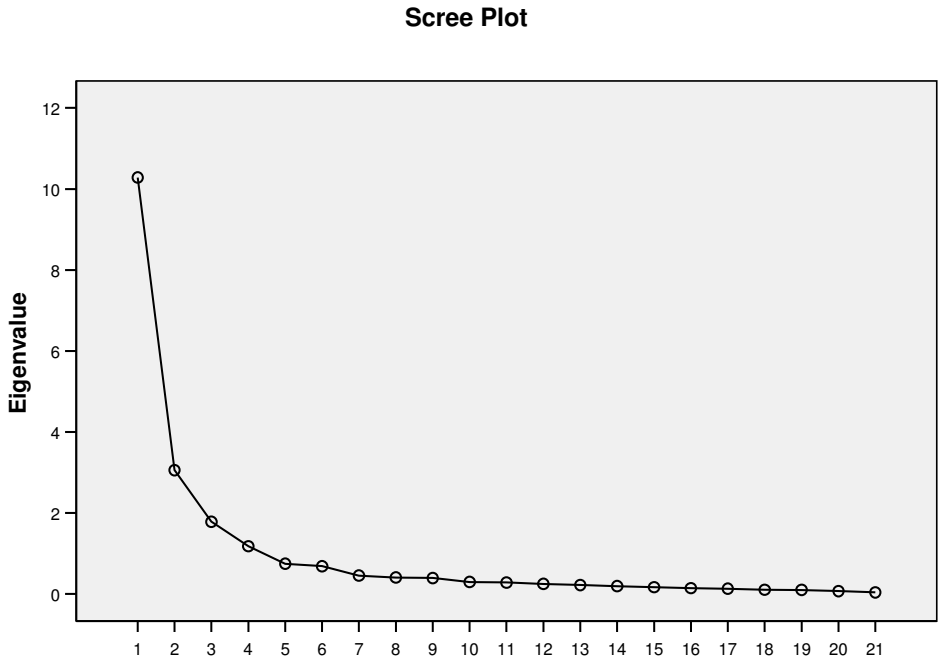

Figure 3. Scree Plot – Joint Factor Analysis

Because this study was exploratory in nature and items were highly correlated, orthogonal (Varimax) and oblique (Direct Oblimin) rotation methods were both applied to the data to see if they differentially improved interpretability. As in the initial factor analysis, the oblique rotations resulted in solutions similar to orthogonal factors, and therefore the orthogonal Varimax rotation was interpreted. Tables 4.32 and 4.33 present results of the joint Exploratory Factor Analysis. The factor solution accounted for almost 78% of the variance and most items loaded strongly on one dominant factor.

Table 4.32. Eigenvalues, Percentage of Variance accounted for by Rotated Factors

Factor	Eigenvalue	% of Variance	Cumulative %
1	5.68	27.04	27.04
2	4.08	19.42	46.46
3	3.91	18.60	65.06
4	2.64	12.57	77.63

Table 4.33. Factor structure of the DURSE and Other Measures - Rotated Factor Loadings using Varimax (orthogonal) Procedures

Item	Factor			
	1	2	3	4
Factor 1: Alcohol/Cigarette DURSE Items				
Alcohol Friend Party	**.805**	.155	.161	.271
Alcohol Older Friend/Sibling Party	**.811**	.135	.270	.271
Alcohol Friend's home	**.796**	.138	.216	.191
Alcohol Adult your home	**.763**	.136	.305	.102
Alcohol Sibling/cousin your home	**.792**	.125	.318	.219
Alcohol Friend your home	**.777**	.201	.406	.121
Cigarette Friend party	**.640**	.090	.426	.275
Cigarette Older Friend/Sibling party	**.670**	.089	.466	.203
Factor 2: Refusal Skills				
Smoke cigarette	.157	**.843**	.116	.216
Drink beer, wine, or liquor	.287	**.824**	.012	.082
Smoke marijuana or hashish	.069	**.898**	.273	.045
Use cocaine or other drugs	.034	**.913**	.244	.008
Sniff glue, paint, gas, other	.128	**.848**	.039	.075
Factor 3: Marijuana DURSE Items				
Friend party	.381	.167	**.834**	.139
Sib home	.405	.170	**.815**	.109
Adult your home	.345	.200	**.839**	.146
Outside	.349	.180	**.845**	.153
Factor 4: Drug Refusal Skills				
Hard to refuse marijuana offer	.072	.075	.174	**.842**
Say "no" to marijuana offer	.289	.131	.199	**.667**
Hard to refuse beer or wine	.278	.032	.075	**.793**
Say "no" to beer or wine	*.472*	.154	.004	***.589***

When factor analyzed with the other measures of resistance skills and resistance self-efficacy, the DURSE items formed two drug-specific dimensions (Factor 1 = alcohol/cigarette items and Factor 3 = marijuana items). Both DURSE cigarette items cross-loaded on the two DURSE factors, and one DRS item ("say no to beer or wine") cross-loaded almost evenly on Factor 1 and Factor 4. The other two subscales formed separate dimensions.

These results provide preliminary evidence that the DURSE items measure a unique but related dimension of drug use resistance self-efficacy when compared with existing scales. DURSE scores were moderately correlated with to the Wake Forest Drug Refusal Skills (DRS) ($r(283) = .481$, $p < .01$) and the Botvin Refusal Skills (RS) ($r(283) =$

.40, $p < .01$) scale scores. While DURSE items are related to measures of similar constructs, preliminary evaluation shows that the DURSE scale is a distinct measure of drug use resistance self-efficacy.

DRS and RS scores were correlated with other variables to assess the difference in construct and predictive validity between these existing scales and the DURSE scale (Table 4.34). Academic performance was assessed with item that stated: "During the past year, how would you describe your grades in school". Response options included 1=Mostly F's, 2=Mostly D's, 3=Mostly C's, 4=Mostly B's, 5= Mostly A's, 6=Not sure. Not sure was recoded to equal 0. Drug intentions were assessed by asking: "At any time during the next 12 months, do you think you will smoke a (insert drug)". Response options included 1=definitely not, 2=probably not, 3=probably yes, 4=definitely yes. Family drug use was assessed with a 3-item scale. Items asked the following: "Do any of your family members (parent or guardian, brother/sister) have a problem with [alcohol, cigarettes, marijuana]". Response options included 0 = No, 1 = yes, my parent or guardian, 2 = yes, my brother/sister, and 3 = yes, both parent and brother/sister. Most students, however, reported "No" on all family use items, and, thus, response options were collapsed into a new variable and recoded including, 0= 0 on all items, 1= 1 *or* 2 on item (parent/guardian or sibling), and 2= 1 *and* 2 on item (both parent/guardian and sibling).

Table 4.34. Correlations among the DURSE Scale and Existing Scales and Other Measures

Outcome Variable	DURSE	DRS	RS
Academic Grades	.147*	.107	.086
Drug Use Intentions	-.329**	-.142*	-.301**
Family Drug Use	-.060	.087	-.142*

*p < .05, **p < .01

The DURSE total scale score was more strongly correlated with academic grades than the DRS or RS scales. For all of the scales, there was a significant inverse correlation with drug use intentions; only a small difference in the correlation was found between the DURSE and the RS scales and drug use intentions. The RS scale was more strongly negatively correlated with family drug use than the DURSE scale, and the DRS scale was not correlated with the family drug use scale in the predicted direction. These results suggest that the DURSE and RS scales exhibited greater predictive validity than the DRS scale among this sample. While this analysis does not provide evidence of major differences in the validity of these scales among this sample, it does suggest that the DRS scale exhibited lower predictive and discriminant validity than the DURSE and the RS scale across all of the variables. The DURSE and RS scales were similar with regards to predicting drug use intentions. The DURSE scale, however, was the only scale that correlated significantly, though moderately, with academic grade and the RS scale was the only scale that correlated significantly with family drug use.

CHAPTER 5: DISCUSSION

The aim of this study was to develop an instrument to measure drug use resistance self-efficacy (DURSE) among young adolescents and to assess the initial reliability and validity of the instrument. The DURSE scale, a 24-item self-report measure was developed and tested using a convenience sample of 7th graders (n=283). Chapter Five presents a discussion of the study results. First, results of the initial development procedures and pilot test will be discussed. Findings related to each of the five study research questions will be addressed next.

Summary of Findings

Developmental Phase

Expert Review

Expert review of the preliminary DURSE scale provided useful information about the content and format of scale items. Experts supported the proposed definition of DURSE, which was "an individual's judgment of his/her capability to resist offers to use cigarettes, alcohol and marijuana in different pressure situations". The majority of items were considered relevant and appropriate for measuring this construct among young adolescents. Experts also identified problematic items and provided useful suggestions for improving their wording and content to increase relevancy among the target population.

In particular, experts felt that the source of the drug offer should be identified in each item. Based on this recommendation, different sources of pressure (i.e. who was making the supposed drug offer) across settings were used to differentiate items. Experts felt that some items were irrelevant (e.g. riding in a car, girl/boyfriend), and thus, these items were removed from the scale. Experts also suggested alternate wording formats and other possible drug pressure situations that were not originally included in the scale. By reviewing the ways in which the DURSE items captured RSE beliefs, experts helped to maximize the content validity of the proposed scale (DeVellis, 2003). First, experts validated the definition of DURSE and relevance of items to operationalize its definition. Second, experts evaluated the clarity and conciseness of items and format by indicating problematic wording and structure. Third, expert reviewers pointed out additional ways of tapping the DURSE construct.

Student Focus Groups

Focus group results contributed to further development and revision of DURSE scale items. A number of themes that surfaced during the focus group discussions informed item revisions. Respondents felt that drug offers could occur in familiar and unfamiliar settings, and thus, both types of settings were included in the scale. Based on student feedback, the role of older friends and siblings was highlighted within scale items which also served to clarify the source of pressure (who's offering). The "party" situation was considered fairly realistic for some participants. The term "girlfriend/boyfriend," however, was considered an unrealistic source of pressure, and "driving in a car" was considered an unrealistic situation for 7^{th} graders. These findings were consistent with expert feedback.

When respondents were asked about ways in which students could resist pressure to use drugs, they provided a variety of responses. Many of their suggestions reflected refusal strategies that are taught as part of the MCPS 6th grade drug prevention curriculum titled "Project Toward No Tobacco" (TNT). This indicated that MCPS seventh graders may have been influenced by 6th grade curriculum. Further, this may suggest that the TNT curriculum was successful in teaching different refusal strategies though it is not possible to determine whether students have or will actually use these strategies during drug pressure situations.

Focus group discussions were part of an initial exploratory step in the development of DURSE items, which was used to obtain student feedback about what questions should be asked and how best to ask them. While students were initially hesitant to describe their thoughts and opinions, they became increasingly expressive throughout the discussion. As individual participants shared their personal thoughts and beliefs with the group, other participants built upon the discussion by sharing their respective viewpoints and opinions. Open and ongoing discussion among participants was valuable in gaining insight into respondents' shared understanding of drug use resistance self-efficacy and drug pressures. Focus group results were drawn upon participants' attitudes, beliefs, feelings, and experiences in a way in which would not have been feasible using other methods such as individual interviews or questionnaires. Further, student focus groups provided qualitative data that served to enhance and compliment results from the expert review.

5.1.2. Pilot test

Item Analysis

Following student and expert feedback, a revised set of 24 DURSE items was pilot tested. An item analysis indicated that scale items were strongly correlated with the total scale. Mean scores were highly skewed and unbalanced in the direction of strong resistance self-efficacy beliefs. That is, students felt extremely sure that they could resist offers to use drugs. The Maryland Adolescent Survey (MAS) (2004) showed that most 6th graders reported never use of cigarettes, beer/wine, liquor and marijuana. While rates of use were higher among 8th graders, the present sample was surveyed during the second month of 7th grade so it is likely that prevalence of drug use was more comparable to 6th grade rates. In accordance with Bandura's self-efficacy theory and past prevention research, students may have overestimated their DURSE beliefs because they had little or no experience with drugs or drug offers (Owen & Froman, 2003; Muser- Eizenman et al., 2003).

Group Interview

An open-ended discussion that followed the pilot administration assisted with evaluating scale format, item wording, and content as well as identifying problems with administration procedures. Feedback elicited through these discussions resulted in important revisions to the response format and directions of the scale. The group interview provided important qualitative data that would not have been captured by closed-ended types of inquiry. For example, qualitative discussions revealed that many students misinterpreted the nature of the questions; that is, they believed that the DURSE

items were asking them to report knowledge (right and wrong), and not beliefs and opinions, and thus, might have been reflected in their comments regarding the scale administration being "too easy".

These results suggested that survey research among young adolescents may be limited in terms of utility and validity if respondents misunderstand instrument directions or individual questions. In the present study, qualitative feedback served to identify this issue, and allowed the researcher to make appropriate changes to reduce the chance of future misinterpretation and, thus, strengthen the validity of the questions. Overall, the pilot test served as a critical phase of the scale development process.

Final scale administration

Descriptive Analysis

Descriptive analysis revealed that most students reported that they received academic grades of A's (n = 117, 41%) or B's (n = 108, 38%) during the past year. Most students self-reported that they were either White (37%, n = 104), Black/African American (25%, n = 71), or Hispanic/Latino (18%, n = 50). Most students reported that they did not intend to use alcohol, cigarettes, or marijuana in the near future and that their family members did not use these substances.

These reports of drug use intentions are in accordance with rates published by national and state-specific surveys. Recent national data reported by Monitoring the Future (2005) showed that among 8th graders, 83% and 74% reported no lifetime use of marijuana or cigarettes, respectively, and a little over half of 8th graders (59%) reported

no lifetime use of alcohol. As stated above, Maryland-specific data showed that most 6th graders reported never having used alcohol, cigarettes, and marijuana (87%, 96%, and 98%, respectively). Most 8th graders also reported that they had never tried alcohol, cigarettes, and marijuana (68%, 84%, and 88%, respectively) (MAS, 2004).

Univariate analysis revealed that DURSE item scores were negatively skewed towards extremely high RSE beliefs and items were highly intercorrelated. As noted previously, it is likely that participants had little or no past drug experience and, therefore, overestimated their self-efficacy beliefs.

Descriptive analysis showed that students reported lowest levels of RSE when asked about resisting alcohol, and highest levels of RSE beliefs when asked about resisting marijuana offers. Further, more respondents reported that they would probably or definitely use alcohol (7.1%) than marijuana (2.2%) in the next 12 months. Alcohol is a legal and socially acceptable drug that is used more frequently than cigarettes and marijuana among young adolescents, and, therefore, lower RSE beliefs for resisting offers to use alcohol were consistent with trends in use (MAS, 2004, MTF, 2004). This pattern was similar to results by Ellickson & Hays (1990) that showed lower RSE and higher pressure when asked about alcohol among 8th and 9th graders. This study found that RSE was an important long-term predictor of alcohol and cigarette use but was not important in predicting marijuana.

Research Question 1

The first research question assessed whether the DURSE items represented a common underlying dimension or separate drug-specific dimensions of RSE beliefs

among adolescents. Using exploratory factor analysis (EFA), an initial principal component analysis (PCA) revealed some evidence of three underlying drug-specific factors; however, several items cross-loaded almost equally on more than one factor. Thus, items with factor loadings of .5 or greater were only retained if loadings on other factors were .2 less than the strongest factor. A second PCA was conducted on a set of 14 items that met less conservative inclusion criteria. Results indicated two underlying constructs, which was somewhat consistent with the conceptual basis of a drug-specific construct. The two factors were labeled: *alcohol and cigarette resistance self-efficacy (RSE)*, and *marijuana resistance self-efficacy (RSE).*

Although the two-factor solution found herein provided the best fit to the data, the fit was not optimal. It is important to note that only 3 of the 14 items passed commonly accepted cutoff levels for factor loadings. While the rotation solution revealed a more even distribution of variance accounted for among components, the usefulness of the secondary component needs to be demonstrated in future studies (Floyd & Widaman, 1995) since it initially only accounted for 9% of the variance. Exploratory factor analysis of these items among a more diverse sample, in terms of RSE level, may provide a better fit to a drug-specific factor structure.

DURSE Factors

Items composing the first factor, *alcohol and cigarette RSE*, captured beliefs related to resisting pressure to use alcohol and cigarettes. Items asked respondents about resisting alcohol offers from friends and older friends/siblings at parties as well as from

friends, older sibling/cousins and adults in the respondents' own home, and at a friend's homes. The factor also included items that asked respondents about resisting cigarette offers from friends and older friends/siblings at parties. Items that asked about resisting alcohol and cigarette offers outside and at school did not load strongly on the factor.

The second factor, *marijuana RSE,* tapped respondents' beliefs regarding ability to resist marijuana offers. Items in this factor asked about resisting marijuana offers from a friend at a party, a sibling or cousin at own home, an adult at own home, and a friend outside of home. Drug type was the main distinguishing feature between factors 1 and 2. That is, alcohol and cigarette items essentially loaded on the first factor, and marijuana items loaded on the second factor. A number of cigarette items did not load significantly on either factor.

Seventy-five percent (6 of 8) of alcohol items and 38% (3 of 8) of cigarette items loaded on the first factor. Alcohol use, as noted previously, is more common and socially acceptable than cigarettes (MAS, 2004), and, thus, it is probable that students reported more consistent DURSE beliefs across alcohol items including those items that ask about resisting offers in home settings. The only two alcohol items that did not load on Factor 1 asked about offers to use alcohol outside of the home and on school grounds. Item analyses showed that students reported higher RSE for these two items than other items. It may be that young adolescents associate outside and school settings with a higher likelihood of getting in trouble, which might be more undesirable to them, and/or more difficulty in accessing alcoholic beverages. This might explain the higher levels of RSE when asked about drug offers made in those settings when compared with the settings described in the other alcohol items. Differences in access across these settings would be

consistent with MAS (2004) data indicating that alcohol represented the drug least likely to be offered to students on school property for both users and non-users in all grade levels (6^{th}, 8^{th}, 10^{th} 12^{th}).

In both rounds of factor analysis, cigarette items demonstrated the most inconsistency and ambiguity. Two of the three cigarette items that loaded on the first factor asked about offers in party settings (from a friend, and from an older friend or sibling). The third item asked about offers from a sibling or cousin at home when no adults are home. It may be that these specific items grouped together with alcohol items because students reported lower RSE levels that were similar to RSE levels reported for alcohol items. Students reported higher RSE levels for the other cigarette items that did not group together well with alcohol items. Cigarette smoking is less common among younger adolescents, and it is probable that most adults, including parents, despite their smoking status, display disapproval for youth cigarette use. Therefore, offers from friends at home, outside, or at school could be seen as less realistic or unimaginable, or tempting and result in overestimated RSE beliefs. Based on item analyses, respondents consistently reported strong RSE beliefs for all of the marijuana items, which resulted in extreme correlations between items indicating redundancy. Thus, among this population, these items were difficult to interpret.

Alcohol and cigarette use may be more closely related in terms of adolescent RSE beliefs because these drugs are generally more accessible, accepted and abused in society than illicit drugs such as marijuana. While marijuana is the most widely used illicit drug (MTF, 2005), adolescent marijuana use rates are lower than licit drugs including cigarette and alcohol. This difference in drug use and acceptability may influence drug initiation

and experimentation particularly during early adolescence (Greydanus, 2005). Alcohol, in particular, is a socially acceptable drug among adults and adolescents. In fact, the Maryland Adolescent Survey (2004) found that alcohol was widely accepted and students reported that beer and liquor received the highest approval from parents and friends (MAS, 2004). Adolescents often begin by using alcohol and/or cigarettes and then proceed to marijuana use (Greynamus 2005; Botvin 2001; Botvin 1986). Thus, it may be more difficult for young adolescents to resist offers to use alcohol and cigarettes when compared with less accepted drugs such as marijuana.

DURSE Structure

Although the fit was not optimal, the findings suggested that the DURSE scale may be a multidimensional scale composed of drug-specific RSE dimensions that generalize across some pressure situations. Drug-specific dimensions of RSE were consistent with Bandura's Social Learning Theory (SLT) which posits that behavior is determined largely by self-efficacy beliefs that represent context specific judgments of an individual's competence to perform a given task or a range of tasks in a specific domain (Bandura, 1997). Despite specificity, however, self-efficacy across related domains may be correlated (Bandura, 2001). As demonstrated in this study, if development of refusal skills and enhancement of efficacy beliefs related to one drug were similar and overlapped with other drugs, separate drug-specific self-efficacy beliefs would be correlated.

Further evaluation of the subscale structure did not warrant a strong justification for dividing items into distinct subscales. The two DURSE subscales had high

correlations with each other and even higher correlations with the total scale, suggesting that these scales were not tapping distinct dimensions. Further, most items were close to or as highly correlated with the total scale as with their own subscale. Thus, the overall DURSE factor (common factor) dominated smaller drug-specific factors and the subscales were combined in favor of a single overall score for use in testing the remaining research questions (Reise, Waller, & Comrey, 2000). As noted by Reise et al. (2000), the existence of small group factors does not necessarily mean that the total score is a poor indicator of the common trait that flows through the scale items (Reise et al., 2000).

Reliability analysis revealed that total scale and subscale reliabilities were extremely high indicating potentially redundant items. Further analyses revealed that internal consistency (α) would not be reduced significantly upon removal of any particular items. These scale characteristics, including reliability estimates, may be different when tested among other samples of 7th graders and /or older students with more exposure and experience with drug use. Among a more diverse sample in terms of RSE level, it is probable that DURSE dimensions would be moderately correlated, yet may warrant separate drug-specific subscales.

Social Influences

Several DURSE items asked about resisting drug offers from friends as well as non-adult (sibling/cousin) family members and influential adults (parent, aunt/uncle or neighbor). The DURSE scale is a substantive refinement of existing scales since the

person making the offer is specified, moving beyond the typical use of broad terms such as “someone”, “best friend” or “girl/boy friend.” Based on focus groups conducted in this study, these students felt that drug offers would not come from their “true friends.” Thus, students may not associate offers from best friends with peer pressure while offers from peer acquaintances (i.e. friends), older peers including siblings, or other adults including parents may represent a more realistic pressure situation.

Interestingly, four of the nine *alcohol/cigarette* items asked about RSE when offers come from an older friend or sibling/cousin. One item on the alcohol/cigarette factor and one item on the marijuana factor ask about RSE when drug offers come from an adult including a parent. This issue may be particularly important considering recent studies that highlight the importance of familial influences on adolescent substance use (Pomery et al; East & Khoo, 2005; Bahr 2005).

While many social influence approaches to drug prevention focus on peers, families also play a role in influencing learning attitudes and behaviors about drugs (Bahr, Hoffman & Yang, 2005; Pomery et al; East & Khoo, 2005; Bahr 2005). Adolescents tend to listen to and imitate individuals who they admire, and, if those individuals are family members who have pro-drug attitudes or engage in drug use, adolescents may have a harder time resisting drug offers. Recent research indicates that siblings, in particular, play an important role in influencing adolescent drug use (Bahr, 2005; East & Khoo, 2005) and, according to some research, is more important than parental influence and is as or more important than peer influence (Pomery et al., 2005). Limited research has examined the influence of adults other than parents on adolescent drug use. DURSE items combine parents, aunts/uncles, and neighbors when asking

about resisting drug offers from "adults" so it would be impossible to disentangle any potential differences in RSE beliefs between offers from parents and non-parents, though this may be an important area for further study.

Drug Use Settings

DURSE items asked about resisting offers in various settings. Items that loaded on the *alcohol/cigarettes* factor included offers at a party, at the respondent's home, and at a friend's home. Items that loaded on the marijuana factor included the same settings as well as outside of the home (e.g. park, field, street). Perhaps young adolescents felt that marijuana offers were more risky or unlikely than alcohol or cigarette offers, and thus it would be more realistic to receive a marijuana offer in an outside, unfamiliar setting. Items that ask about RSE beliefs when offers occur at school did not load on either factor.

Assessing RSE beliefs in different settings can lead to a better understanding of where students may feel more or less pressure to use drugs. It was possible that younger adolescents considered offers at home more realistic than outside or school settings because they have less freedom in middle school than in high school. In fact, Mayer and colleagues (1998) reported that younger adolescents were still more likely to use alcohol in their homes than in other homes or in open fields. Adolescents typically gain more independence at home, outside of home, and in school as they get older and thus, "outside" and "school" situations may be considered more realistic for older adolescents. Some demographic differences in substance use settings have been identified (Mayer et al., 1998; Moon et al., 1999; Hussong, 2000), and thus, these differences should be further explored.

Demographic Differences

Additional demographic comparisons indicated that students' DURSE scores did not differ significantly by gender and were not correlated with age. Ethnic differences indicated that Hispanic/Latino participants reported significantly lower resistance self-efficacy than White students. Interestingly, recent Monitoring the Future results showed that Hispanic 8th graders have the highest rates of use across nearly all classes of drugs (Johnston & et al MTF). Unfortunately, limited sample size in this study did not allow for cross-validation of the factor structure across ethnic groups, but this should be explored further. Differences in level of pressure to use drugs across ethnicity may also be an area for further investigation.

Conclusions drawn from these analyses must be considered tentative for a number of reasons. First, the item correlations prior to factor analysis indicated problems of multicollinearity. Second, data did not conform to multivariate normality. That is, mean scores were highly skewed and unbalanced in the direction of strong resistance self-efficacy beliefs. This exploratory study provided an initial step in examining the dimensionality of the DURSE scale among a homogenous sample with regards to age, degree of self-efficacy, and drug intentions. Thus, scale characteristics, including reliability estimates, may be different when tested among other samples of 7th graders and /or older students with more exposure and experience with drug use. Future scale development studies would be useful for determining if there are redundant items which can be eliminated, thus allowing for a more parsimonious instrument.

Research Question 2

The second research question assessed the validity of the DURSE scale. To assess validity, the associations between the total DURSE score and three additional variables were evaluated and demonstrated adequate evidence of construct validity. As predicted, students who reported higher RSE beliefs reported significantly higher academic grades ($r(283 = .147, p < .05$). This significant, but moderate positive relationship supports previous research showing that high RSE beliefs are associated with academic achievement (Scheier et al., 1999). It has been suggested that higher academic achievement may protect against adolescent substance use (Wright & Fitzpatrick, 2004), and poor academic achievement correlates with early use of alcohol (Ellickson et a .2003; Ellickson et al., 2001), cigarettes (Audrain-McGovern et al., 2004), and marijuana (Ellickson PL, Tucker JS, Klein DJ, Saner H, 2004). The moderate correlation suggests that academic achievement and reported self-efficacy are related, though other factors likely play a role in this relationship.

Higher RSE beliefs ($r(283) = -.329, p < .01$) were also significantly associated with lower self-reported intentions to use drugs in the next year, as hypothesized. The confirmation of this association between RSE beliefs and future drug intentions suggests that stronger RSE beliefs correlate with lower likelihood of trying drugs in the future, especially among young adolescents with little or no experimentation with drug use (Orlando, 2005). This finding supported the theoretical assertion that perceived self-efficacy is a major determinant of intention and that intention is the strong predictor of actual behavior (Bandura, 2001; Ajzen, 2002; Fishbein & Ajzen, 1975). While the correlation was significant, it was quite moderate indicating that self-efficacy is not the

only factor accounting for differences between self-efficacy beliefs and future intentions.

Higher RSE beliefs were negatively associated with reported family drug use ($r(283) = -.060$) though the relationship was not significant. Previous studies suggest that parental and family substance use behaviors have a significant impact on the risk of adolescent drug use (Bahr et al., 2005; Li et al., 2002). It was possible that this study lacked adequate statistical power to identify a significant relationship. Also, this appeared to be a very low risk population that reported little drug use at home.

These findings show that the DURSE scale demonstrated predictive and construct validity, though correlations, despite significance, were relatively low. Low to moderate correlations between DURSE scores and other study variables, however, indicate that other factors may have accounted for differences between these factors. Risk and protective factors that play a role in adolescent drug use include a range of cognitive, familial, school, social, peer, and community influences that may vary across individual demographics such as age, gender, ethnicity, and psychosocial developmental factors (Brown et al., 2005; Donaldson et al., 1994; SAMSHA/CSAP, 1999; Moon et al., 1999; MTF, 2002; NIDA, 2005; Vakalahi, 2001). Protective factors such as social competence, effective problem solving skills, high parental monitoring and family bonding, no substance use in the family, high academic achievement, and community bonding can counterbalance or mediate the effects of risks associated with adolescent substance use and reduce the probability of drug initiation (Brown et al., 2005; SAMSHA/CSAP, 2003).

Risk factors associated with adolescent drug use include academic failure, peer influence, familial factors, favorable attitudes towards substance use, antisocial and

aggressive behavior, and community factors (Brown et al., 2005; SAMSHA/CSAP, 2003, 2004; NIDA, 2005; Greydanus & Patel, 2005). Further, broader societal and cultural factors such as social cohesion, neighborhood problems, drug and alcohol purchase opportunity and availability also contribute to drug use and initiation (SAMSHA/CSAP 2004; Moon et al., 1999; Duncan, Duncan, & Stycker, 2002; James, Wagner, & Anthony, 2002). These factors were not included in the set of measured variables for the present study but may be highly related to drug use intentions and other risk or protective factors.

Research Question 3

The third research question examined whether students provided socially desirable responses. DURSE scores were significantly correlated with scores on the Social Desirability scale ($r(283) = .196$, $p<.01$) indicating that students may have answered certain DURSE items in a socially desirable way. This finding was not necessarily surprising and was supported by past research indicating that self-reported responses related to substance use can result in inaccuracies (Stein et al., 2002). It was possible that students felt uncomfortable answering certain survey questions in a truthful way especially since questions asked about potentially sensitive issues such as resisting drug offers, drug use intentions, and family drug use. Despite assurances of anonymity and confidentiality when administering the survey, teachers administered the survey during a health education class and active parental consent was employed in this study. Factors such as age and setting could have impacted the honesty of students' responses, and, thus, results of the current study may be influenced by biases associated with social desirability. Students may report less socially desirable responses if surveys are not

administered by teachers and if parental consent is not required. Future survey administration, using the procedures set forth by this study, may also result in socially desirable responses among young adolescents.

Research Question 4

The final research question aimed to assess whether the DURSE scale captured aspects of RSE beliefs among young adolescents that differed from existing measures. It was hypothesized that DURSE items would load strongly on one factor, and Drug Refusal Skills (DRS) and Refusal Skills (RS) items would load on separate factors. To test this hypothesis, a joint factor analysis was conducted with the final 13 DURSE items, the 5 RS items and the 4 DRS items. PCA found a four-factor solution to be most appropriate for the set of items accounting for 77.7% of variance.

As hypothesized, DURSE items formed two drug-specific dimensions (Factor 1 = alcohol/cigarette items and Factor 3 = marijuana items) which was consistent with the previous PCA results. Overall, items of each scale primarily loaded on scale-specific, separate dimensions indicating that the DURSE items tap a unique dimension of drug use RSE when compared with existing scales. DURSE scores correlated significantly with both scales (DRS, $r(283) = .477$, $p < .01$; DR, $r(283) = .397$, $p < .01$) demonstrating evidence of concurrent validity.

The DURSE scale appears to tap is a distinct, but related measure when compared with existing measures. It covers a wider range of pressure situations, settings and drugs. The DRS only focuses on alcohol and marijuana offers from “best friends”, and the RS

scale includes a single item for each drug category, does not specify who is making the drug offer, and does not provide a condition for refusal.

Finally, when the DRS and RS scales were correlated with other measures to assess predictive and construct validities, few differences were revealed. Overall, the DRS scale exhibited lower predictive and discriminant validity than the DURSE and the RS scale across all of the variables. The DURSE and RS scales exhibited similar associations with drug use intentions. The DURSE scale, however, was the only scale that correlated significantly, though moderately, with academic grades. The RS scale was the only scale that correlated significantly with family drug use.

A thorough review of the literature did not reveal any extensive psychometric testing of the DRS and RS scales. These scales were examined by the Center for Substance Abuse Prevention (SAMSHA/CSAP)'s Core Measures Initiative (CMI) Task Force as part of an overall effort to develop a core guide of evaluation measures within five areas of prevention-related behavior. CSAP reviewed the scales for measuring "resistance skills" defined as the "ability to refuse offers of and temptations to use drugs." Limited psychometric evidence is reported by CSAP for each scale, though the DRS scale was recommended for measuring resistance skills because it specifies the condition of refusal and the source of the drug offer (best friend offering, you don't want it). While a number of other resistance self-efficacy scales were identified in the literature, most measures were not designed for young adolescents and were not subject to thorough psychometric testing. This study shows that the DURSE scale represents a unique and specific measure of resistance self-efficacy that demonstrates comparable or improved content, construct, and predictive validities when compared with other measures.

Study Limitations

There were a number of limitations to this study. First, there were several limits on the extent to which these findings can be generalized to all 7th graders. If the study were conducted among students from different MCPS schools as well as different counties in terms of size, location, or drug prevention curriculum, results may have been substantially different. The sample may have under represented several groups of

students from the 7 study schools including those (a) who were absent on the day of data collection; (b) who were not enrolled in school; (c) who did not return active parental consent forms; and (d) who were not able to read or spoke English as their second language. Students who were not enrolled in school may be home-schooled or school drop-outs and thus, may display important differences in self-reports of RSE and related constructs as well as drug use behavior. In addition, if the study were conducted among students who did not return guardian permission slips for participation and who were not present on the day of data collection, findings may have also been quite different. Students who did not return parental permission slips might have less involved parents, whereas students whose parents refused participation might have parents who monitor them quite carefully. Parental influence and family involvement may be different between these two groups, and, thus, may influence beliefs and behaviors. That is, students who experience less parental monitoring and bonding may be at an increased risk for drug use.

While MCPS health education classes are not grouped by academic level, self-reported academic achievement in this sample indicated that some academic groups may be over or under or over represented, respectively (i.e. honors students, low level students, etc.). The sample itself was limited in that most students reported low intentions to use drugs in the future and high levels of DURSE. Thus, the sample did not report a full range of the construct levels. Therefore, it was not possible to generalize the psychometric properties of the DURSE scale to all 7th grade students, younger and/or older students, or students living in different socioeconomic levels and geographic areas.

The DURSE scale may also be missing important pressure situations or sources of drug offers.

Second, due to the cross-sectional nature of the data, levels of RSE beliefs were only measured at one point in time, and changes related to age and experience were not determined. For example, factors such as changes in substance use experience, and 6th grade drug prevention curricula were not controlled. Longitudinal studies that measure RSE beliefs and related variables over time could provide an index of whether and to what extent relationships between these variables change as young adolescents enter later stages of adolescent development. Experience with drug offers and drug experimentation that could occur over time may influence resistance self-efficacy beliefs. Further, all MCPS 6th graders receive Project Toward No Tobacco Use (TNT), and, thus, the influence of this program on survey responses is not known.

Third, self-report data can result in several biases. Results showed a significant relationship between the Social Desirability scale and DURSE scores indicating that some students may not have shared their honest answers because they believed that resisting drug offers was a socially desirable behavior. Despite the use of anonymous measures, assurance of confidentiality and requests for honesty, a number of students may have been inclined to give misleading answers, either overestimating or underestimating their beliefs and intentions. Survey administration procedures (i.e. data collected by teachers during health education classes) could have also impacted responses. Inexperience and unfamiliarity with drug pressure or drug use, as well as leading statements about refusing drug offers, may have led students to overestimate competence and efficacy judgments (Bandura, 2001). In addition, misunderstanding of

items, and response style could have led to inaccurate findings. Fourth, self-report measures of behavioral intentions were used as a proxy for future behavior and might not be an accurate measure of actual behavior.

Finally, analytical limitations should also be noted. First, the item correlations prior to factor analysis, indicated problems of multicollinearity. Second, data did not conform to multivariate normality. Factor analytic methods are more likely to yield clearer, more replicable factor patterns with data that meet multivariate normality (Floyd & Widaman, 1995). Third, decision rules used for the exploratory factor analysis were modified because of limitations in the distribution of DURSE scores. Using the proposed decision rule (i.e. loadings greater than .5 on factor and no greater than .3 on other factor), most alcohol and cigarette items cross-loaded (> .30) on two or more factors and thus, an alternate, less conservative, criterion was applied (i.e. loadings of at least .5 and differences of at least .2 on all non-dominant factors).

Delimitations

A number of delimitations related to reviewed literature, study participants, and methodological procedures should also be noted. First, literature reviewed in Chapter Two describes the prevalence of three drugs: alcohol, cigarettes, and marijuana. An in-depth review of the published literature regarding other types of drugs such as smokeless tobacco, inhalants, prescription drugs, and cocaine was not included. Second, the review of literature focused on the influence of individual cognitive risk factors, specifically resistance self-efficacy beliefs. Youth substance use was determined by a complex interaction of many risk and protective factors including familial attitudes and behavior,

peer influence, and broader community factors. The value of a psychometrically sound measure of RSE beliefs was limited to the role it plays within a larger set of contextual and community factors influencing youth substance use behavior. A thorough review of the entire set of these factors was beyond the scope of the present study.

Third, thorough scale development requires multiple validation studies and the collection of normative data on young adolescents (Spector, 1992). This study only assessed initial psychometric of the DURSE scale using one, relatively homogenous, sample of 7th grade students. Fourth, temporal stability of the DURSE scale as measured by test-retest reliability was not estimated due to time constraints and a short time period between proposed testing periods and implementation of regular MCPS drug prevention curriculum. Lastly, a small number of focus groups were conducted, and focus group data were not examined by more than one coder, which may have introduced some amount of bias into the reported results.

Implications

Given the evidence supporting social influence prevention programs that incorporate strategies for increasing drug use resistance self-efficacy, a well-tested measurement tool to assess this construct is critical. As indicated by the study findings, the DURSE scale may be useful to practitioners as well as researchers by contributing to the current need for a more thorough assessment of RSE among young adolescents. The original 24-items should be tested across larger, more diverse populations of 7^{th} graders and older adolescents to assess whether the factor structure found in the present study is robust for different groups of respondents, as well as whether the structure changes over

developmental time. Upon further testing and refinement, the DURSE scale could be administered longitudinally to determine the effects of school-based interventions aimed at preventing drug use among adolescents. These programs aim to build and strengthen drug resistance skills among youth through a variety of methods, including participatory learning activities such as modeling, role playing, and practice of drug resistance skills (Orlando, 2005; Shin, 2001).

These findings may help researchers better understand and interpret the various ways that RSE beliefs cluster together. Preliminary evidence that the DURSE scale is a multidimensional measure of RSE beliefs is supported by Bandura's SLT and may raise questions concerning the continued interpretation of overall RSE scores as assessed by existing scales. That is, these measures do not include items related to an adequate range of drug types. Scales, such as the DRS scales, that include a limited number of items, some of which ask about marijuana, may be insufficient in capturing RSE beliefs, especially among young adolescents. Although the use of separate drug-specific subscales was not warranted in the present study, different samples may demonstrate important differences between subscale scores, and, thus, interpretation of a total score would not necessarily be appropriate.

These study findings may have implications for the development and implementation of school-based drug prevention programs. The DURSE scale could be used to obtain more precise estimates of RSE and, thus, facilitate a better understanding of the influence of drug use self-efficacy on drug use behavior. Further, DURSE scores may reveal important pressure situations that could be targeted in prevention programs. This would greatly contribute to an area where there currently is limited research

(Hussong, 2000). Past research has identified ethnic and gender differences in drug use and refusal of drug offers showing, for example, that Mexican American adolescents were more likely to receive drug offers from family members, while African Americans were more likely to receive drug offers from dating partners and parents. Both males and females were more likely to receive offers from others of the same gender, but females were more likely to receive offers from dating partners than their male counterparts (Moon et al., 1999). Elsewhere, Hussong (2000) found that female adolescent alcohol users were more likely than males to report alcohol use at family parties and, to some extent, in their own homes. In that study, with respect to other drug use, again female adolescent drug users were somewhat more likely to use illicit drugs at social parties (Hussong, 2000).

Adolescent differences in substance use behavior across age, gender, and ethnicity require careful consideration when assessing RSE. The current study suggests that older friends and siblings may be an area that deserves increased attention in understanding and targeting RSE beliefs among adolescents. In addition, settings of drug use and pressure situations serve as important factors in assessment and intervention. There is a clear need for prevention programs as well as measurement tools tailored to specific adolescent populations based on age, developmental stage, gender, and ethnicity. Current scales are limited in scope and consist of items that may not be appropriate for younger adolescents. For example, Bell and others have used a resistance self-efficacy measure that assesses beliefs in two situations, on a date and at a party. This study suggests that the date situation may not be the most appropriate/common pressure situation for younger

adolescents; thus, calling into question the adequacy of that scale for younger adolescents.

It may be useful for practitioners to include drug-specific curriculum when implementing programs that focus on increasing RSE beliefs among adolescents. For example, offers from older peers could present more realistic situations that are associated with lower reports of RSE, and thus, could be a target for prevention efforts. Additionally, if adolescents' drug-specific RSE beliefs generalize across situations, resistance training may only need to cover a few scenarios, rather than the entire range of possible pressure situations as suggested by Hays and Ellickson (1990).

Differences in DURSE scores between ethnic groups found in the present study indicated that demographic differences in correlates of drug use require careful consideration when assessing RSE and tailoring prevention programs. For example, RSE may serve as an important target component of programs tailored to young Hispanic/Latino adolescents who have recently demonstrated disproportionately higher drug use rates in the US (MTF, 2005).

While DURSE scores were associated with other measures, providing initial evidence of validity, correlations were moderate to low. This suggests that other risk and protective factors including individual, social (peer, familial), and environmental influences also play a role in determining resistance self-efficacy beliefs. Resistance self-efficacy represents one of many factors involved in determining adolescent drug use, albeit, an important cognitive factor.

Future Research

This study followed a well-established, multi-step process to develop and provide psychometric evidence of the DURSE scale. Each step contributed important information and could be replicated. This process must continue beyond the initial development of the scale as items and normative data are further refined.

Exploratory PCA provided tentative evidence that the DURSE scale may adequately tap drug-specific dimensions. The question remains, however, as to whether these results will generalize to other samples of youth. RSE beliefs may differ depending on the population studied; thus, different measures may need to be developed for subpopulations based on gender, ethnicity, age and geographical location (urban vs. rural).

Cross-validation would be desirable for future exploratory and confirmatory factor solutions of the DURSE scale. If sample sizes are large enough, participants can be randomly assigned to two groups, to assess whether the factor structure is replicated across groups (Floyd & Widaman, 1995). Confirmatory factor analysis using a Structural Equation Modeling approach could be used to further test the factor structure established through the present study. This approach would be useful to determine whether the DURSE actually contains a meaningful dimensional structure. Assessment of separate dimensions would lead to a better understanding of RSE beliefs among adolescents.

Total scale and subscale reliabilities found in this study were extremely high, indicating potentially redundant items. According to the *attenuation paradox,* increasing the internal consistency of a test beyond a certain point will not enhance its construct validity and, in fact, may occur at the expense of validity because strongly intercorrelated

items are highly redundant (i.e. once one of them is included in the scale, the other(s) contribute virtually no unique information) (Clark & Watson, 1995). Hence, future psychometric testing of the DURSE scale should be aimed at refining and omitting redundant items.

While the DURSE scale demonstrated evidence of construct and predictive validity, these relationships should be further tested and compared with existing measures among a larger, more representative sample. Future testing of the DURSE scale might include additional measures of other risk and protective variables that were not included in the present study. These studies could provide additional psychometric evidence of the DURSE scale and further evidence of differences between the DURSE scale and existing scales. The present study used reported behavioral intentions as a proxy for drug behavior and thus, it is unknown whether the scale would predict actual drug use. Further research could use self-report of drug use as well as physiological measures (e.g. carbon monoxide measures) to establish the sensitivity, specificity and predictive value of the DURSE scale (Colletti et al., 1985). Study participants displayed little variance in reported academic grades, drug intentions, and family drug use; therefore, future testing of the relationship between DURSE scores and other variables among different populations could reveal different results. Further, DURSE scores could be correlated with intention to use other drugs to test the validity of predicting drug use beyond alcohol, cigarettes and marijuana.

Continued research should assess the appropriateness of the scale among other samples of 7th grade students, high school students, younger children, and school drop-outs in various geographic settings. Cognitive and psychosocial development, as well as

changes in drug experience, may influence RSE beliefs and thus, change the psychometric properties of the DURSE instrument. Research assessing differences between groups (cultural diversity, age, gender) may reflect actual differences in RSE as well as differences in instrument performance. If further testing indicates that the DURSE scale is a psychometrically sound measure, it may serve as a useful tool in understanding RSE beliefs among adolescents in the future and contribute to improved evaluation of school-based prevention programs.

Conclusions

The current study sought to assess the psychometric properties of a newly developed drug use resistance (DURSE) scale among young adolescents. While the final scale included a 12 item self-report Likert measure that used a 4-point unipoloar response format ranging from “not sure at all” to “definitely sure”, with higher numbers representing greater degrees of perceived self-efficacy the original 24 items should be tested in future research.

The study findings present an initial drug-specifc factor solution that should be confirmed in a larger, more representative sample. Initial psychometric properties of the revised DURSE scale, including internal consistency reliability and construct validity, were satisfactory. The present study suggests that the DURSE scale may tap two dimensions of RSE beliefs that are not adequately tapped by existing scales. In the current investigation, the use of separate subscales for testing the main research questions was not warranted.

Although the scale's validity and reliability have not been fully established, the results offer a promising first step in the development process, and present an opportunity to refine the scale and test its usefulness in different population groups. Additional development and testing of the instrument could yield a practical tool to measure drug use RSE among adolescents.

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APPENDIX A – Invited Experts

Area of Expertise	Expert's Name
School Health Education	▪ *Barbara Pearlman-Tobacco Prevention Specialist, Montgomery County Public Schools, Rockville, Maryland ▪ Russell Henke, Coordinator of Health Education, Montgomery County Public Schools, Rockville, Maryland ▪ *2-3 Montgomery County Public School Middle School Teachers (6th, 7th, 8th) as recommended by Russell Henke and Barbara Pearlman (1 teacher participated) ▪ *Dr. Denise Seabert: Assistant Professor, Department of Physiology and Health Science, Ball State University; Expert areas include professional preparation, K-12 health instruction, teaching methods, curriculum theory and practice, and qualitative research methods.
Measurement and Scale Development	▪ *Dr. Mohammed Torabi: Chairperson, Department of Applied Health Science, Indiana University. Expertise in measurement and evaluation of health education studies. ▪ Dr. Robert McDermott: Director of Florida Prevention Research Center; Professor-Dept of Community and Family Health, University of South Florida College of Public Health; Professor and Assistant Dean for Health Information and Communication; Expertise in Health Education Evaluation and Measurement ▪ *Dr. Rober Weiler: Chairman and Professor, Department of Health Education & Behavior, University of Florida. Expertise in adolescent health, planning and evaluation, community health education, prescription drug abuse. Currently developing resources for drug abuse prevention for middle school teachers.
Alcohol Tobacco and Other Drug Use and Correlates	▪ Dr. Kenneth Griffin, Associate Professor, Institute for Prevention Research, Department of Public Health, Weill Medical College of Cornell University. Expertise: Adolescent risk behaviors, with a primary focus on the etiology and prevention of alcohol, tobacco, and other drug use among youth; Research interests includes the "role of social and personal competence skills in protecting youth from drug use…and the design, implementation, and evaluation of preventive intervention programs for youth." ▪ Dr. Phyllis Ellickson: RAND Corporation. Expertise: adolescent health, substance abuse prevention, adolescent/young adult violence, HIV risk, use of tobacco, alcohol, and other drugs, effects of advertising on alcohol use ▪ *Dr. William Hansen: President of Tanglewood Research. Recognized expert in substance abuse prevention. (has not responded to email; will make another attempt) ▪ *Dr. Grace M. Barnes – Research Institute on Addictions, University at Buffalo. Research interests include adolescent alcohol and substance use; family issues, parenting and general population surveys. ▪ *Dr. Susan C Wraith Duncan – Researcher at Oregon Research Institute. Research experience in social context and family related contextual issues influencing adolescent substance use behavior.
Adolescent Health and Behavior	▪ Dr. Lloyd Kolbe - Research Areas include adolescent health, health behavior, and school health programs ▪ *Dr. Guy Parcel – University of Texas, Health Science Center, Houston ▪ *Dr. Morgan Pigg- University of Florida, Health Education & Behavior
*Participated in expert review	

APPENDIX B
Expert Panel Invitation

Date

Expert Name/Title
School of Public Health at Houston
1200 Herman Pressler
Houston, TX 77030

Dear Expert Name,

I am developing a scale to measure drug use resistance self-efficacy for seventh grade students. This research is to fulfill my requirements for my doctoral dissertation at the University of Maryland, College Park.

I would like to invite you to participate in an expert panel to review and evaluate the initial item pool developed for the proposed scale. The panel will be asked to rate the relevancy and clarity of each item to the definition of the construct. Expert reviewers will also be invited to evaluate individual items with open ended comments. Your participation can include either online or mailed communication. You will receive a copy of the initial item pool with a rating form via email or in the mail depending upon your preference. The form can be completed and sent back to me electronically or in hard copy as well.

The information you provide will help to maximize the content validity of my scale. I hope you will assist me in this research effort.

I appreciate your help. If you have any questions, please call me at (617-998-1066) or email me at Carriedph@gmail.com.

APPENDIX C

Expert Rating Form – Modified Version

Dear Participant,

Thank you for agreeing to participate in an expert panel review of initial items designed to measure young adolescents' perceptions of self-efficacy for resisting offers to use alcohol, cigarettes, and marijuana in different pressure situations.

The proposed instrument will consist of an approximately 21 item self-report measure in a 7-point unipolar response format ranging from 1 to 7 with higher numbers representing greater degrees of perceived self-efficacy. A rating form for evaluating potential items as well as providing open ended comments related to content, format, and inadequacies is attached. Three different wording options are also illustrated below for your review.

Please see the attached preliminary Table of Specifications subdividing DURSE beliefs by drug type and pressure situation. This has served as the framework for designing the initial structure and item generation in the development of the DURSE instrument.

I appreciate your help. If you have any questions, please call me at (617-504-5810) or email me at Carriedph@gmail.com.

Rating Form for Expert Panel Evaluating Potential Items for a *Drug Use Resistance Self-Efficacy (DURSE)* Scale

Expert Instructions:

First, in the table provided, please rate each item with respect to its relevance to the defined construct (A=high relevance, B=moderate relevance, C-low relevance). Second, rate how realistic each situation is to the intended population (seventh graders) (A=very realistic, B=realistic, C=not very realistic). Please feel free to provide feedback on the clarity and conciseness of items as well as inadequacies in tapping the construct of interest as you see fit. The comment section is provided for your open-ended feedback on wording, content, and other suggestions. Finally, please rate the appropriateness of the three proposed wording options and the response format, and again feel free to provide open-ended feedback. Thank you again for your time.

Defined Construct - Drug Use Resistance Self-efficacy

This construct aims to capture an individual's judgment of his/her capability to resist offers to use cigarettes, alcohol and marijuana in different pressure situations. The initial DURSE instrument structure will be tested for three separate substance or situation specific subscales.

EXAMPLE TABLE

Pease rate each item with respect to its relevance to the defined construct (A = high relevance, B = moderate relevance, C = low relevance).		
Item	Rating	Comments
Say no to an offer to drink alcohol at a party with a boyfriend or girlfriend?		
Say no to an offer to smoke a cigarette at a party with a boyfriend or girlfriend?		
Say no to an offer to smoke marijuana at a party with a boyfriend or girlfriend?		

Please rate how realistic each situation is to the intended population (A = very realistic, B = realistic, C = not very realistic).		
Situation	Rating	Comments
At a party with a boyfriend or girlfriend		
At home with family members		
At your home when no adults are home		
At a friend's home when no adults are home?		
An outside setting away from your home (for example, a park or bus stop)?		
At a party with friends		
From your best friend at a party		
Riding in a car with others (friends and/or siblings)		

Wording Options

Please rate each wording option with respect to its appropriateness to the target audience and defined construct (A = very appropriate, B = moderately appropriate, C = not appropriate at all)

A. If you want to, how sure are you that you can say no to an offer to (insert drug) at (insert situation)?

Rating =

B. If you don't want it, how sure are you that you can say no to an offer to (insert drug) at (insert situation)?

Rating =

C. How sure are you that you can say no to an offer to (insert drug) at (insert situation)?

Rating =

Response Format

Please rate the response format with respect to its appropriateness to the preliminary items. (A = very appropriate, B = moderately appropriate, C = not appropriate at all)

Rating =

1	2	3	4	5	6	7
Not Sure at all		Not too sure		Pretty Sure		Very Sure

APPENDIX D
Focus Group Guide

Introduction
Hello and welcome! My name is _____ and I will be leading this focus group discussion today. I would also like to introduce _____ (recorder). She will be taking notes during the discussion. We would like to get your ideas about situations in which students your age may receive offers or feel pressure to use cigarettes, alcohol, and marijuana when they don't want to use these types of drugs. We are developing a questionnaire to understand students' ability to say no to these types of drug offers. But before any questionnaires are developed it's most important to find out about the types of situations where drugs are offered to seventh graders. We would like to hear about your thoughts about realistic situations in which seventh graders may feel pressure to use alcohol, cigarettes, and marijuana.

As you can see, there is a tape recorder here, and the reason for this is so I can get all your ideas without having to try and write everything down, and I won't have to worry about forgetting anything that you say. However, no one, other than me, listening to the tapes will know what you said individually. When the ideas that come from this focus group are discussed, I will say things like "seventh graders' thoughts," or "people participating thought" – we will not use individual names. Also, if there is any question you don't want to answer, you certainly don't have to, and you are of course are free to stop participating at any time. If you do wish to stop participating you can sit quietly.

As I just mentioned, the purpose of this focus group is to find out your thoughts and beliefs about realistic situations in which seventh graders may receive offers and feel pressure to use alcohol, cigarettes, and marijuana. **As we discuss your thoughts, please do not include any individual names or other information that could identify people.**

So let's get started:
Ice Breakers

What's your favorite part of middle school?" or "What does health mean to 7th grade students?"
Are students your age offered drugs/alcohol/tobacco? If so, how does this happen?
Remember do not include any names or other information that could identify people.

Questions

1) Explain to me where (type of setting) you think students your age may receive offers to use drugs?
   Just say anything that comes to mind…If you can think of a situation tell me about it. Familiar places?

2) If students were to receive offers outside of their own house, where would those places be?
   Outdoors/inside someone else's house or car? If out of the house, are these places close home, walking distance?
3) Who would most likely make these kinds of offers to seventh graders? Someone they know/don't know?
4) Do you think these situations have/will change as you get older? Why? How?
5) Of the situations we just talked about, which are students most worried about and why?
6) How do you think seventh graders find themselves in these situations? Why?
7) Now I am going to read you a list of possible drug pressure situations that I came up one at a time with one at a time. After I read each situation, take a minute to think about the situations and then tell me if you think this is a realistic or likely situation for students your age to receive drug offers. Why or why not?

List of situations

At party with someone who is more than a friend (girlfriend or boyfriend)
At your home with a friend when no one else is home
At your home with a friend when no adult is home
At home with family member, parents, siblings, and cousins included.

Outside setting away from your home (park, street, school,)

At your friend's home when no adult is home
At a party with friends, siblings, or cousins
Riding in a car with others? (friends, siblings, cousins)

8) Do you think parents or other adults can help with this problem of peer pressure to use drugs? How? *Do you have ideas for solutions to prevent using drugs among middle school students? Tell me anything that comes to mind.*
9) What do you think students can do to say no to these offers to use drugs?
10) What helps these students resist alcohol, tobacco, and marijuana?

APPENDIX E

Preliminary Scale

PLEASE DO NOT PUT YOUR NAME ON THIS FORM

Directions: Your answers to this questionnaire will help us to understand how people your age resist alcohol, cigarettes, and marijuana. Please rate how sure you are that you can resist offers to use cigarettes, alcohol, and marijuana in the situations described below by circling the letter that fits best for you. Please give honest answers. Your answers will not be shared with anyone.

Original Format for all items:

1) How sure are you that you can refuse **if a friend offers you alcohol at a party** and you do not want it?
   a. Not sure at all
   b. Not very sure
   c. Somewhat sure
   d. Very sure
   e. Completely sure

2) How sure are you that you can refuse **if a friend offers you a cigarette at a party** and you do not want it?

3) How sure are you that you can refuse **if a friend offers you marijuana at a party** and you do not want it?

4) How sure are you that you can refuse **if an older friend, brother or sister offers you alcohol at a party** and you do not want it?

5) How sure are you that you can refuse **if an older friend, brother or sister offers you a cigarette at a party** and you do not want it?

6) How sure are you that you can refuse **if an older friend, brother or sister offers you marijuana at a party** and you do not want it?

7) How sure are you that you can refuse **if a friend offers you alcohol in his/her home when no adults are home** and you do not want it?

8) How sure are you that you can refuse **if a friend offers you a cigarette in his/her home when no adults are home** and you do not want it?

9) How sure are you that you can refuse **if a friend offers you marijuana in his/her home when no adults are home** and you do not want it?

10) How sure are you that you can refuse **if an adult (parent, aunt/uncle, neighbor) offers you alcohol in your home** and you do not want it?

11) How sure are you that you can refuse **if an adult (parent, aunt/uncle, neighbor) offers you a cigarette in your home** and you do not want it?

12) How sure are you that you can refuse **if an adult (parent, aunt/uncle, neighbor) offers you marijuana in your home** and you do not want it?

13) How sure are you that you can refuse **if a brother, sister or cousin offers you alcohol in your home when no adults are home** and you do not want it?

14) How sure are you that you can refuse **if a brother, sister, or cousin offers you a cigarette in your home when no adults are home** and you do not want it?

15) How sure are you that you can refuse **if a brother, sister, or cousin offers you marijuana in your home when no adults are home** and you do not want it?

16) How sure are you that you can refuse **if a friend offers you alcohol in your home when no adults are home** and you do not want it?

17) How sure are you that you can refuse **if a friend offers you a cigarette in your home when no adults are home** and you do not want it?

18) How sure are you that you can refuse **if a friend offers you marijuana in your home when no adults are home** and you do not want it?

19) How sure are you that you can refuse **if a friend offers you alcohol outside of your home (park, field, street)** and you do not want it?

20) How sure are you that you can refuse **if a friend offers you a cigarette outside of your home (park, field, street)** and you do not want it?

21) How sure are you that you can refuse if **a friend offers you marijuana outside of your home (park, field, street)** and you do not want it?

22) How sure are you that you can refuse **if a friend offers you alcohol at school when no adults are around** and you do not want it?

23) How sure are you that you can refuse **if a friend offers you a cigarette at school when no adults are around** and you do not want it?

24) How sure are you that you can refuse **if a friend offers you marijuana at school when no adults are around** and you do not want it?

APPENDIX F

Qualitative Discussion Guide

The investigator will administer the preliminary scale to the class. After everyone has completed the survey the investigator will facilitate an open discussion related to students' experiences in completing the scale. This discussion will be observed and recorded for review by the researcher.

Student Questions:

1) Do you think the survey was too long or too short? For example, when thinking about other surveys / exams you take in school, was this longer than most, shorter than most, or about the same length?

2) Do you think the directions were clear?

3) Were any of the questions confusing, unclear, or hard to understand? Why?

4) Were there any possible drug pressure situations missing? If so, which ones?

5) Do you think the response options (answer choices) were easy to understand? If yes or no, why?

6) Did you leave any questions blank? If so, why?

7) Does the survey need improvements? If so which ones? How would you improve the survey for seventh graders?

APPENDIX G
Final Instrument

DO NOT PUT YOUR NAME ON THIS FORM. NO NAMES WILL EVER BE REPORTED.

Directions: The questions in this survey ask about your personal attitudes and beliefs. It has been developed so you can tell us what you may do in drug pressure situations. Your answers will be used to develop better health education for young people like yourself. Please circle the answers based on what you really do.

Thank you for helping us with this study.

Please circle the answer that best describes you. Mark <u>one</u> answer for each question.

1. How old are you?
   ____ years

2. Are you female or male?
   a. Female
   b. Male

3. How would you describe yourself?
   a. American Indian or Alaska Native
   b. Asian
   c. Black or African American
   d. Hispanic or Latino
   e. Native Hawaiian or Other Pacific Islander
   f. White

4. During the past year, how would you describe your grades in school?
   a. Mostly A's
   b. Mostly B's
   c. Mostly C's
   d. Mostly D's
   e. Mostly F's
   f. Not sure

The next 3 questions ask about future drug use. Please circle the answer that best describes your honest opinions. Mark <u>one</u> answer for each question.

5. At any time during the next 12 months, do you think you will smoke a cigarette?
   a. Definitely not
   b. Probably not
   c. Probably yes
   d. Definitely yes

6. At any time during the next 12 months, do you think you will drink alcohol (not including religious holidays)?
   a. Definitely not
   b. Probably not
   c. Probably yes
   d. Definitely yes

7. At any time during the next 12 months, do you think you will smoke marijuana?
   a. Definitely not
   b. Probably not
   c. Probably yes
   d. Definitely yes

The next several statements ask about personal attitudes and qualities. <u>Read each item and answer the question as it relates to you personally.</u>

8. Have there been times when you took advantage of someone?
   a. Yes
   b. No
   c. Not sure

9. Have you sometimes taken unfair advantage of another person?
   a. Yes
   b. No
   c. Not sure

10. Are you always willing to admit when you make a mistake?
    a. Yes
    b. No
    c. Not sure

11. Are you quick to admit making a mistake?
    a. Yes
    b. No
    c. Not sure

12. Do you sometimes try to get even rather than forgive and forget?
    a. Yes
    b. No
    c. Not sure

13. Do you sometimes feel resentful when you don't get your own way?
    a. Yes
    b. No
    c. Not sure

14. Are you always courteous, even to people who are disagreeable?
    a. Yes
    b. No
    c. Not sure

15. Are you always a good listener, no matter whom you are talking to?
    a. Yes
    b. No
    c. Not sure

Refusal Skills Scale
The next several questions ask for your beliefs about resisting drug offers in different situations. Please choose the answer that best describes <u>your honest beliefs</u>. There are NO correct answers to these questions.

16. Would you be able to say "no" when someone tries to get you to smoke a cigarette?
    a. Definitely would
    b. Probably would
    c. Not sure
    d. Probably would not
    e. Definitely would not

17. Would you be able to say "no" when someone tries to get you to drink beer, wine, or liquor?
    a. Definitely would
    b. Probably would
    c. Not sure
    d. Probably would not
    e. Definitely would not

18. Would you be able to say "no" when someone tries to get you to smoke marijuana or hashish?
    a. Definitely would
    b. Probably would
    c. Not sure
    d. Probably would not
    e. Definitely would not

19. Would you be able to say "no" when someone tries to get you to use cocaine or other drugs?
    a. Definitely would
    b. Probably would
    c. Not sure
    d. Probably would not
    e. Definitely would not

20. Would you be able to say "no" when someone tries to get you sniff glue, paint, gas, or other things you inhale to get high?
    a. Definitely would
    b. Probably would
    c. Not sure
    d. Probably would not
    e. Definitely would not

Drug Refusal Skills Scale

21. Pretend your best friend offered you marijuana and you did not want it. How hard would it be to refuse the offer?
    a. Very easy
    b. Pretty easy
    c. Pretty hard
    d. Very hard

22. Pretend your best friend offered you marijuana and you did not want it. How sure are you that you could say "no"?
    a. Very sure
    b. Pretty sure
    c. A little unsure
    d. Not sure at all

23. Pretend your best friend offered you a drink of beer or wine and you did not want it. How hard would it be to refuse the offer?
    a. Very easy
    b. Pretty easy
    c. Pretty hard
    d. Very hard

24. Pretend your best friend offered you a drink of beer or wine and you did not want it. How sure are you that you could say "no"?
    a. Very sure
    b. Pretty sure
    c. A little unsure
    d. Not sure at all

The next 3 questions ask about family drug use. Please choose the best answer.

25. Do any of your family members (parent or guardian, brother/sister) have a problem with alcohol?
    a. Yes, my parent or guardian
    b. Yes, my brother/sister
    c. Yes, both parent and brother/sister
    d. No

26. Do any of your family members (parent or guardian, brother/sister) smoke cigarettes?
    a. Yes, my parent or guardian
    b. Yes, my brother/sister
    c. Yes, both parent and brother/sister
    d. No

27. Do any of your family members (parent or guardian, brother/sister) smoke marijuana?
    a. Yes, my parent or guardian
    b. Yes, my brother/sister
    c. Yes, both parent and brother/sister
    d. No

DURSE SCALE

The next several questions ask about resisting offers to use alcohol, cigarettes, and marijuana (pot) in different situations. Please choose the answer that best describes <u>your honest beliefs</u>. There are no correct answers to these questions.

ALCOHOL

28. How sure are you that you can refuse **if a friend offers you alcohol at a party** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

29. How sure are you that you can refuse **if an older friend, brother or sister offers you alcohol at a party** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

30. How sure are you that you can refuse **if a friend offers you alcohol at his/her home when no adults are home** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

31. How sure are you that you can refuse **if an adult (parent, aunt/uncle, neighbor) offers you alcohol at your home** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

32. How sure are you that you can refuse **if a brother, sister or cousin offers you alcohol at your home when no adults are home** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

33. How sure are you that you can refuse **if a friend offers you alcohol at your home when no adults are home** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

34. How sure are you that you can refuse **if a friend offers you alcohol outside of your home (at a park, field, street)** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

35. How sure are you that you can refuse **if a friend offers you alcohol at school when no adults are around** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

CIGARETTES

36. How sure are you that you can refuse **if a friend offers you a cigarette at a party** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

37. How sure are you that you can refuse **if an older friend, brother or sister offers you a cigarette at a party** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

38. How sure are you that you can refuse **if a friend offers you a cigarette at his/her home when no adults are home** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

39. How sure are you that you can refuse **if an adult (parent, aunt/uncle, neighbor) offers you a cigarette at your home** and you do not want it?
    a. Not sure at all
    b. Not very sure
    c. Pretty sure
    d. Definitely sure

40. How sure are you that you can refuse **if a brother, sister, or cousin offers you a cigarette at your home when no adults are home** and you do not want it?
    a. Not sure at all

b. Not very sure
c. Pretty sure
d. Definitely sure

41. How sure are you that you can refuse **if a friend offers you a cigarette at your home when no adults are home** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

42. How sure are you that you can refuse **if a friend offers you a cigarette outside of your home (at a park, field, street)** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

43. How sure are you that you can refuse **if a friend offers you a cigarette at school when no adults are around** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

MARIJUANA

44. How sure are you that you can refuse **if a friend offers you marijuana at a party** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

45. How sure are you that you can refuse **if an older friend, brother or sister offers you marijuana at a party** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

46. How sure are you that you can refuse **if a friend offers you marijuana at his/her home when no adults are home** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

47. How sure are you that you can refuse **if an adult (parent, aunt/uncle, neighbor) offers you marijuana at your home** and you do not want it?
a. Not sure at all

b. Not very sure
c. Pretty sure
d. Definitely sure

48. How sure are you that you can refuse **if a brother, sister, or cousin offers you marijuana at your home when no adults are home** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

49. How sure are you that you can refuse **if a friend offers you marijuana at your home when no adults are home** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

50. How sure are you that you can refuse if **a friend offers you marijuana outside of your home (at a park, field, street)** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

51. How sure are you that you can refuse **if a friend offers you marijuana at school when no adults are around** and you do not want it?
a. Not sure at all
b. Not very sure
c. Pretty sure
d. Definitely sure

APPENDIX H

Phase II –Focus Groups - IRB Application

The Development of a Drug Use Resistance Self-efficacy Instrument for Young Adolescents – Phase I: Student Focus Groups

1. **Abstract**

The long term objective of the proposed study is to develop and evaluate initial evidence of reliability and validity of an instrument, the *Drug Use Resistance Self-Efficacy Scale* (DURSE), designed to measure drug use resistance self-efficacy among young adolescents. The purpose of the proposed focus group study is to obtain qualitative data on seventh graders' perceptions of realistic drug pressure situations (settings and types of offers) to be included in the final instrument. A convenience sample of 15 seventh grade students will be recruited from one Montgomery County Public School System (MCPS) middle school to participate in the focus group discussions. The principal researcher, who has experience in moderating focus groups, will conduct the focus groups addressing participants' perceptions of drug pressure situations. The University of Maryland Public Health Informatics Research Laboratory within the Department of Public and Community Health has provided support to MCPS in planning and evaluating drug prevention curricula in the past, and this research will be used to enhance program implementation and evaluation in the future.

2. Subject Selection

Students in two Montgomery County Public School System (MCPS) health education classes will be recruited to participate in the focus group discussions. Recruitment will be conducted in collaboration with MCPS. The Coordinator of Health Education will identify a teacher who teaches seventh grade health education including drug prevention curricula. If possible, the Coordinator of Health Education will select a teacher with a diverse group of student in terms of ethnicity, gender, and academic level. This teacher will be contacted by email and/or telephone and will be asked to schedule a time for two focus groups, one per health education class period. The teacher will recruit a minimum of six and maximum of eight males from one health education class and the same number of females from the second health education class. Students will be eligible to participate if they speak English as their first language. Since these focus groups will be conducted with seventh graders, the limited number and gender-based separation of participants will help create a comfortable and productive environment for open discussion. Appendix A has the focus group guide.

3. Procedures

The principal student researcher will moderate the focus group discussions during class time in a MCPS middle school classroom. One note taker will assist the researcher by taking notes during the discussion. The note taker will be introduced to

the students to provide a more comfortable environment. She/he will be sitting with the students but will not be participating in the discussion. Focus groups will be tape recorded as well. The student researcher will use these tapes for transcribing the discussions and tapes will be destroyed upon conclusion of the study. The focus group will last no longer than one class period and will be conducted during regularly scheduled health education class time in an open MCPS classroom. Students will be pulled out of their health education class to participate in the focus groups in a separate room away from their nonparticipating classmates. Students will be recruited to participate in the focus groups before they receive any drug prevention curriculum. Students will not receive incentives for participation since all of the students will not be provided the opportunity to participate in the discussions.

4. **Risks and Benefits**

There are no physical, social, or legal risks of any kind to the participants. It is unlikely that responses to some questions may cause some discomfort or anxiety among subjects yet potentially sensitive issues in regards to self-disclosure and discussion among classmates may come up. Teachers will be informed that these issues may arise following the focus groups. Risks to study participants are minimal. The focus groups are meant to generate qualitative feedback on realistic situations in which seventh graders may receive offers and feel pressure to use cigarettes, alcohol, and/or marijuana. It is possible that participants may receive no benefit from participating in the evaluation. It is hoped that information collected from these discussions will benefit MCPS and middle-school teachers and students in the future. Because the focus group discussion may illicit potentially sensitive information regarding drug offers, parental consent and student assent will be required. Students will be assigned to focus groups by teachers. Students who do not wish to contribute to the discussion can sit quietly during the focus group.

5. Confidentiality

Participants will be informed about the purpose of the focus group, confidentiality, benefits and risks of participation, and reminded that participation is voluntary. A parental permission form will be obtained from each student (Appendix B). In addition, students who participate will be asked to sign a Student Assent form (Appendix C). Since the focus group discussions will be embedded within the normal MCPS activities that are routinely carried out as part of the ongoing middle school health education drug prevention curriculum, MCPS is not required to seek parental consent for the data collection. However, MCPS has agreed to this protocol (student assent and parental permission form) and has provided the University of Maryland IRB with a letter of support from Russell Henke, Coordinator of Health Education (Appendix D). Data will be recorded and kept in a locked filing cabinet at the office of the focus group moderator. Upon completion of the tape recorded transcription, the tapes will be deleted and destroyed. Findings based on the focus groups will not be reported in terms of specific individuals but will be discussed in aggregate.

6. Information and Consent Forms

Since the Public Health Informatics Research Laboratory (PHI) has provided prior consultation to MCPS on the evaluation of the sixth and seventh grade drug

instructional programs, the researcher will provide the results of the qualitative analysis to the MCPS Coordinator of Health Education for use in enhancing their program. The focus group discussions will be embedded within the normal MCPS activities that are routinely carried out as part of the ongoing educational planning, implementation and evaluation of the middle school health education drug prevention curriculum; therefore, MCPS is not required to seek parental consent for the data collection. However, the discussion of drug offers may be a sensitive topic, especially among middle school students, and therefore, students will be issued a parental permission form at least 10 week days prior to the study to be given to a parent or guardian. Parents will be asked to return the form to the teacher within 10 week days indicating whether there child should or should not participate in the focus group. Parents will be provided with contact information (phone number and email) for their child's teacher, the researcher, and University of Maryland's IRB to be used if they would like to inform them of non-consent or have any additional questions regarding the activity. Teachers will be asked to direct parent concerns or questions that they can not answer to Carrie Carpenter, Research Analyst/Doctoral Candidate. This form will require that parents provide permission for their child's participation in the focus group activity. Participating students will be asked to complete a Student Assent form. During the discussion, participating students may not wish to contribute to the focus group. These students will be given the opportunity to return to their regularly scheduled class period or sit quietly during the discussion.

7. Conflict of Interest

There is not perceived or actual conflict of interest.

8. HIPAA Compliance

This study will not be using any protected health information or "PHI".

Parental Permission Form

Project Title: Student Focus Group Discussions – Understanding Drug Pressure Situations

The University of Maryland will be leading small group discussions among seventh grade students as part of the regular Montgomery County Middle School (MCPS) drug prevention program. The purpose of these focus groups is to help us develop and evaluate a questionnaire to measure adolescents' confidence in saying no to drug offers from others. These discussions will help the MCPS drug prevention program planners to understand the settings and types of drug offers that adolescents may be exposed to. Information will be used to develop a questionnaire to measure changes in adolescents' attitudes and behaviors after they have participated in MCPS drug prevention programs. MCPS has been planning and evaluating drug prevention curricula in the past, and this research will be used to enhance program implementation and evaluation in the future.

The focus group discussions will take no longer than one health education class period. During this session your child will be asked questions about situations in which someone their age might be pressured to use drugs. They will also be asked about the types of drug offers they have experienced. For example, students will be asked to describe where (type of setting) they think students their age may receive offers to use drugs and whether students their age are offered drugs/alcohol/tobacco. Your child will not have to answer any questions she/he does not want to answer and she/he is free to stop participating at any time without penalty. Your child's participation will have no effect on his/her course grade. All of the youth who participate will be told this as well.

All information in the study is confidential, and your child's name will not be identified at any time when reviewing and reporting results. These discussions will be taped so the discussions can be reported accurately and transcribed by the moderator. Audiotaped discussions will only be listened to by the moderator and will be destroyed following the discussion. One note taker will assist the researcher by taking notes during the discussion. The note taker will be introduced to the students to provide a more comfortable environment. There are no risks associated with participation in this activity. This activity is not designed to help any child personally, but will lead to a better understanding of drug pressure situations experienced by seventh grade students.

Please sign the permission section below to agree to your child's participation. If you have any additional questions about this activity or would like to inform your child's teacher that she or he should not participate, please contact him/her at (INSERT phone number and email address).
For additional project information, please contact:
Carrie Carpenter, M.S.
Research Analyst
University of Maryland
617-998-1066
University of Maryland, Institutional Review Board
IRB Coordinator, Roxanne Freedman at 301-405-4212 or at rfreedman@umresearch.umd.edu

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Student's Name _____ Date _____
____My child has permission to participate in the focus groups described above. (please check)
Parent Guardian Name (please print) _____

Parent/Guardian Signature _____

Student Assent Form -
Project Title: The Development of a Drug Use Resistance Self-efficacy Instrument for Young Adolescents – Phase I: Student Focus Groups

I state that I wish to participate in small group discussions being conducted by University of Maryland as part of the regular Montgomery County Middle School (MCPS) drug prevention program.

The purpose of these discussions is to collect information from MCPS seventh graders' to help us create and evaluate a questionnaire to measure adolescents' confidence in saying no to drug offers from others.

The procedure involves a group discussion (focus group) during one class period, during which I will be asked open-ended guided questions about different kinds of pressures to use drugs and how realistic they are…something like this situations and whether I think different situations presented by the leader of the discussion are realistic or not. I do not have to answer any question I do not want to answer and I am free to stop participating at any time.

All information collected in the study is confidential, and my name will not be identified at any time. No individual responses will be reported. The discussions will be tape recorded so the discussion leader can listen to the results following the discussion, but these tapes will be destroyed at the end of the project. One note taker will assist the leader by taking notes during the discussion.

I understand that there are no risks associated with this study. I understand that the study is not designed to help me personally, but that the researchers hope to learn more about the beliefs of seventh grade students. I understand I am free to ask questions or to stop participating at any time without penalty, and that my participation will have no effect on my grade.

Name (please print) _____

Signature _____

Date _____

APPENDIX I

Phase III –Pilot Test - IRB Application

The Development of a Drug Use Resistance Self-efficacy Instrument for Young Adolescents – Phase II: Preliminary Scale Pilot Test

1. Abstract

The long term objective of the proposed study is to develop and evaluate initial evidence of reliability and validity of an instrument, the *Drug Use Resistance Self-Efficacy Scale* (DURSE), designed to measure drug use resistance self-efficacy among young adolescents. The purpose of the proposed study is to obtain pilot data on the preliminary DURSE scale (Appendix A). The preliminary scale includes items generated from existing resistance skill measures and data obtained through an expert panel review and student focus group discussions. Pilot data will be used to discover problems with formatting, phrasing of items, and/or the response selections as well as data collection procedures. A convenience sample of one Montgomery County Public School System (MCPS) middle school seventh grade class (approximately 30 students) will be recruited to participate in the pilot test. These respondents will be asked to complete the preliminary scale and to critique the instrument in an open-ended group discussion following the scale administration. The University of Maryland Public Health Informatics Research Laboratory within the Department of Public and Community Health has provided support to MCPS in planning and evaluating drug prevention curricula in the past, and this research will be used to enhance MCPS program implementation and evaluation in the future.

2. Subject Selection

Students in one Montgomery County Public School System (MCPS) health education classes will be recruited to participate in the pilot testing of the preliminary DURSE scale. Recruitment will be conducted in collaboration with MCPS. The Coordinator of Health Education will identify a teacher who teaches seventh grade health education including drug prevention curricula. If possible, the Coordinator of Health Education will select a teacher with a diverse group of student in terms of ethnicity, gender, and academic level. This teacher will be contacted by email and/or telephone and will be asked to schedule a time for the pilot test during one health education class period. Students will be eligible to participate if they speak English as their first language. The pilot test will be conducted during the normal class period and therefore be part of the natural classroom environment.

3. Procedures

The MCPS tobacco prevention specialist will administer the paper/pencil self-report instrument during class time in a MCPS middle school classroom. Upon completion, the students will be asked to keep the instrument on their desk and sit quietly until the entire class has finished completing the scale. After everyone has completed the survey, the tobacco prevention specialist will invite students to participate in an open-ended discussion in the classroom. Students will have the option of sitting quietly

during this discussion if they do not wish to participate. A question guide for the discussion is presented in Appendix B. The tobacco prevention specialist will moderate this discussion. The teacher will be asked to take notes on the discussion for record keeping along with the moderator. If the teacher does not wish to record notes, an additional researcher will be asked to participate in notetaking. Students will be recruited to participate in the pilot test prior to receiving the normal drug prevention curriculum delivered in MCPS seventh grade health education classes. Students will be provided with colorful pencils as an incentive for participating in the study. This discussion will not be audiotaped. The completed surveys will be collected at the end of the discussion and sent to the researcher.

4. **Risks and Benefits**

There are no physical, social, or legal risks of any kind to the participants. It is unlikely that responses to some questions may cause some discomfort or anxiety among subjects. Risks to study participants are minimal. Pilot data collected on the DURSE inventory will be instructive for revising and further testing the scale. Students' qualitative comments will be instructive for evaluating and revising content, scale format, phrasing of items, response options, and directions for completing the preliminary set of items. Modifications could involve rewriting items to improve clarity, eliminating items that are confusing or do not provide relevant information, or adding new items to obtain more complete information. The pilot test will also provide useful information on the length of time that it takes respondents to complete the measure, data collection procedures, and initial item analyses. It is possible that participants may receive no benefit from participating in the evaluation. It is hoped that information collected from these discussions will benefit MCPS and middle-school teachers and students in the future. Students who do not wish to contribute to the follow-up discussion can sit quietly during this time.

5. Confidentiality

Participants will be verbally informed about the purpose of the pilot test, confidentiality, benefits and risks of participation, and reminded that they should not put their name on the instrument (Appendix C). Since the pilot test will be embedded within the normal MCPS activities that are routinely carried out as part of the ongoing middle school health education drug prevention curriculum, MCPS is not required to seek parental consent for the data collection but has agreed to support the request for obtaining passive parental consent for this project. The scale administration (pencil/paper, self-report format) and group discussion procedures discussed above represent evaluation activities currently conducted in MCPS health education classrooms. Therefore, MCPS has agreed to this protocol and has provided the University of Maryland IRB with a letter of support from Russell Henke, Coordinator of Health Education (Appendix D). Data from the study will be sent to the principal student researcher, and kept in a locked filing cabinet. Individual student names will not be used when taking notes on the group discussion. Findings based on the qualitative group discussion will not be reported in terms of specific individuals but will be discussed in aggregate.

6. Information and Consent Forms

The pilot test will be embedded within the normal MCPS activities that are routinely carried out as part of the ongoing educational planning, implementation and evaluation of the middle school health education drug prevention curriculum; therefore, MCPS is not required to seek parental consent for the data collection but supports the request to obtain passive parental consent.
Ten days before the in-school administration the teacher will send home a letter to parents/guardians informing them about the study and providing them a means for declining their child's participation if they so desire (see Appendix E).

The researcher will provide the results of the study to the MCPS Coordinator of Health Education for use in enhancing their program. Since MCPS program planners and teachers will use this data to enhance the current evaluation instruments, student assent will not be obtained and students will be asked to complete the written portion of the study if their parents do not excuse them from participation in the study. Students who do not wish to contribute to the follow-up discussion can sit quietly during this time. Students whose parents complete and send back the parental consent form indicating their exclusion from participation will be directed by the teacher to leave the classroom during the study. That is, these students will be led to another location such as another classroom, gym class, or the media center.

7. Conflict of Interest

There is not perceived or actual conflict of interest.

8. HIPAA Compliance

This study will not be using any protected health information or "PHI".

****Please read this information to students before passing out the surveys****

Thank you for helping us with this pilot study of the DURSE instrument. Pilot data collected on the DURSE inventory will be used to revise the scale for future use with seventh graders. Please **DO NOT** put your name on the survey.

You will not be graded on your answers and your answers will be completely anonymous because your name will not be on the survey. Once you have completed the questionnaire, put your pencil down and sit quietly at your desk. After everyone has completed the survey, we will ask you to give us your thoughts about the questions and the questionnaire in general during a group discussion. Individual student names will not be identified or used when taking notes on this discussion.

Your open-ended comments will be used in changing content, scale format, phrasing of items, response options, and directions for completing this set of items. It is hoped that information collected from these discussions will benefit MCPS and middle-school teachers and students in the future.

Parental Permission Slip
Project Title: Student Survey – Understanding Drug Pressure Situations

The University of Maryland will be administering an **anonymous** self-report pen/pencil survey among seventh grade students as part of the regular Montgomery County Middle School (MCPS) drug prevention program. Upon completion of the survey, students will be given the opportunity to provide open-ended comments on their experience with completing the survey in a group discussion format. The purpose of the survey and group discussion is to help us evaluate a questionnaire to measure adolescents' confidence in saying no to drug offers from others. This process will help the MCPS drug prevention program planners to understand the settings and types of drug offers that adolescents may be exposed to. Information will be used to improve the questionnaire and ultimately to measure changes in adolescents' attitudes and behaviors after they have participated in MCPS drug prevention programs. MCPS has been planning and evaluating drug prevention curricula in the past, and this information will be used to enhance program implementation and evaluation in the future.

The survey and discussion will take no longer than one health education class period. During this session your child will be asked to complete the questions about their perceptions of confidence in resisting drug use in pressure situations. In the subsequent group discussion, your child will be given the opportunity to comment on their experience with completing the survey and the survey itself. For example, students will be asked about the content, difficulty, and clarity of the survey. Your child will not have to answer any questions she/he does not want to answer and she/he is free to stop participating at any time without penalty. Your child's participation will have no effect on his/her course grade. In fact, students will be asked not to write their name on the surveys. One note taker will assist the survey administrator by taking general notes during the discussion. That is, no names will be associated with specific comments. All of the students who participate will be told this as well.

This activity is not designed to help any child personally, but will lead to a better understanding of drug pressure situations experienced by seventh grade students. If you agree to your child's participation, please fill out the bottom of this form and return it to the teacher.

Please sign the permission section below to agree to your child's participation. If you have any additional questions about this activity or would like to inform your child's teacher that she or he should not participate, please contact him/her at (frieda_e_cooney@fc.mcps.k12.md.us).

For additional project information, please contact:
Carrie Carpenter, M.S.
Research Analyst
University of Maryland
617-998-1066

University of Maryland, Institutional Review Board
IRB Coordinator, Roxanne Freedman at 301-405-4212 or at rfreedman@umresearch.umd.edu

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Student's Name _____ Date _____
____My child has permission to participate in the focus groups described above. (please check)
Parent Guardian Name (please print) _____
Parent/Guardian Signature _____

Student Assent Form

Project Title: Drug Use Resistance Self-efficacy Instrument for Young Adolescents : Pilot Test

I state that I wish to take part in a pilot study led by University of Maryland as part of the regular school drug prevention program.

The purpose of this survey is to gather information from seventh graders' using a questionnaire that asks about confidence in saying no to drug offers from others.

The study involves a questionnaire and group discussion that will take place during class. I will be asked to complete a pencil/paper survey about my confidence to say no to different kinds of pressures to use drugs. Following the survey, I will be given the chance to provide comments about my experience in completing the survey during a group discussion. I do not have to answer any question I do not want to answer and I am free to stop participating at any time. The survey will probably take me about 20-30 minutes to complete. The group discussion may take up the rest of the class period (20-30 minutes).

All information collected in the study is confidential, and my name will not be identified at any time. I will not put my name on the survey. During the group discussion, no individual responses or names will be reported. One note taker will assist the leader by taking notes during the discussion.

The researchers told me that they don't think there are any risks that will harm me. I understand that the study is not supposed to help me personally, but that the researchers hope to learn more about the beliefs of seventh grade students. I understand I am free to ask questions or to stop participating at any time, and that my participation will have no effect on my class grade.

Name (please print your name) _____

___ I agree to take part in the study.

Date _____

APPENDIX J

Phase IV – IRB – Final Scale Administration

The Development of a Drug Use Resistance Self-efficacy Instrument for Young Adolescents – Phase III: Final Scale Administration

1. Abstract

The long term objective of the proposed study is to develop and evaluate initial evidence of reliability and validity of an instrument, the *Drug Use Resistance Self-Efficacy Scale* (DURSE), designed to measure drug use resistance self-efficacy among young adolescents. The purpose of the proposed study is to obtain data on the DURSE scale and examine items for psychometric evidence. This scale development study aims to assess the factor structure, internal consistency, and validity of the Drug Use Resistance Self-efficacy (DURSE) scale. The final DURSE scale includes items generated from existing resistance skill measures and data obtained through an expert panel review, student focus group discussions and pilot data. A convenience sample of approximately ten Montgomery County Public School System (MCPS) middle school seventh grade classes (approximately 300 students) will be recruited to participate in the pilot test. These respondents will be asked to complete the self-report scale which will be part of a larger instrument. This questionnaire will consist of the DURSE items, two related refusal skills scales, three demographic questions (gender, race/ethnicity, and age), a social desirability scale, a drug intention scale, an academic performance item, and a family drug use scale (Appendix A). Data analysis will include an examination of the psychometric properties of the DURSE scale as well as correlations between the DURSE scale and other constructs. The University of Maryland Public Health Informatics Research Laboratory within the Department of Public and Community Health has provided support to MCPS in planning and evaluating drug prevention curricula in the past, and this research will be used to enhance MCPS program implementation and evaluation in the future.

2. Subject Selection

Students in approximately ten Montgomery County Public School System (MCPS) health education classes will be recruited to participate in the pilot testing of the preliminary DURSE scale. Recruitment will be conducted in collaboration with MCPS. The MCPS Coordinator of Health Education and Tobacco Prevention Specialist will identify teachers who teach seventh grade health education, including drug prevention curricula. If possible, the Coordinator of Health Education will select teachers with diverse groups of student in terms of ethnicity, gender, and academic level. Teachers will be contacted by email and/or telephone and will be asked to schedule a time for the scale administration during one health education class period. Students will be eligible to participate if they speak English as their first language. The scale administration will be conducted during the normal class period and therefore be part of the natural classroom environment.

3. Procedures

The researcher will administer the paper/pencil self-report instrument during class time in MCPS middle school classrooms. Students will be recruited to participate in the study prior to receiving the normal drug prevention curriculum delivered in MCPS seventh grade health education classes. Students will be provided with colorful pencils as an incentive for participating in the study. The survey administrator or teacher will read a set of instructions to the students (Appendix B). The completed surveys will be collected by the teacher or researcher when every respondent has finished the questionnaire.

4. Risks and Benefits

There are no physical, social, or legal risks of any kind to the participants. It is unlikely that responses to some questions may cause some discomfort or anxiety among subjects. Risks to study participants are minimal. Data collected for this study will be instructive for examining the reliability and validity of the DURSE scale. It is possible that participants may receive no benefit from participating in the evaluation. It is hoped that information collected from these discussions will benefit MCPS and middle-school teachers and students in the future. Students who do not wish to participate or who have not received appropriate parental permission will be told that they can sit quietly during the survey administration.

5. Confidentiality

Participants will be verbally informed about the purpose of the study, confidentiality, benefits and risks of participation, and reminded that they should NOT put their name on the instrument. Since the pilot test will be embedded within the normal MCPS activities that are routinely carried out as part of the ongoing middle school health education drug prevention curriculum, MCPS is not required to seek parental consent for the data collection but has agreed to support the request for obtaining active parental consent and student assent for this project. The scale administration (pencil/paper, self-report format) procedures discussed above represent evaluation activities currently conducted in MCPS health education classrooms. Therefore, MCPS has agreed to this protocol and has provided the University of Maryland IRB with a letter of support from Russell Henke, Coordinator of Health Education (Appendix C). Data from the study will be kept by the principal student researcher in a locked filing cabinet. Individual student names will not be used at any point in this study. Findings based on the study results will not be reported in terms of specific individuals but will be discussed in aggregate.

6. Information and Consent Forms

The survey will be embedded within the normal MCPS activities that are routinely carried out as part of the ongoing educational planning, implementation and evaluation of the middle school health education drug prevention curriculum; therefore, MCPS is not required to seek parental consent for the data collection but supports the request to obtain parental consent and student assent. Five days before the in-school administration the teacher will send home a letter to parents/guardians informing them about the study and requiring permission for their child's participation through a signed and returned consent form (Appendix D). This time period has been recommended by two MCPS teachers. Students whose parents decline their participation or do not return a signed parental consent form to teachers will not be eligible for participation. Students will be asked to read and sign an assent form before completing the questionnaire (Appendix E).

The researcher will provide the results of the study to the MCPS Coordinator of Health Education for use in enhancing their program. Students who do not wish to participate in the study can sit quietly during this time and/or whose parents complete and send back the parental consent form indicating their exclusion from participation will be directed by the teacher to sit quietly and/or read during the study.

7. Conflict of Interest

There is not perceived or actual conflict of interest.

8. HIPAA Compliance

This study will not be using any protected health information or "PHI".

Survey Instrument – Teacher Protocol

****Please read this information to students before passing out the surveys****

Thank you for helping us with this survey. It has been developed so you can tell us what you may do in drug pressure situations. The information you give will be used to develop better health education for young people like yourself.

Please **DO NOT** put your name on the survey. You do not have to answer any questions you do not want to answer and can stop participating at any time. Make sure to read every question. If you have questions about any of the survey items, you may raise your hand and ask the administrator. If he/she cannot answer your question, you can make the best possible choice or leave the answer blank.

The questions that ask about your background will be used only to describe the types of students completing this survey. The information will not be used to find out your name. **No names** will ever be reported.

You will **NOT** be graded on your answers and your answers will be completely anonymous because your name will not be on the survey. Once you have completed the questionnaire, put your pencil down and sit quietly at your desk. After everyone has completed the survey, we will collect the questionnaire and answer sheet.

Parent Consent Form

Project Title: Student Survey – Understanding Drug Pressure Situations

The University of Maryland will be administering an **anonymous** self-report pen/pencil survey among seventh grade students as part of the regular Montgomery County Middle School (MCPS) drug prevention program. The purpose of the survey is to help evaluate a questionnaire to measure adolescents' confidence in saying no to drug offers from others. This process will help the MCPS drug prevention program planners to understand the settings and types of drug offers that adolescents may be exposed to. Information will be used to improve the questionnaire and ultimately to measure changes in adolescents' attitudes and behaviors after they have participated in MCPS drug prevention programs. MCPS has been planning and evaluating drug prevention curricula in the past, and this information will be used to enhance program implementation and evaluation in the future.

The survey will take no longer than one health education class period. During this session your child will be asked to complete a survey including questions related to the following: 1) age, grade, ethnicity 2) academic performance, 3) confidence in resisting drug use in pressure situations, 4) family drug use, 5) intentions to use drugs, and 6) social desirability. Your child will sign an assent form stating that he/she will not have to answer any questions that she/he does not want to answer and she/he is free to stop participating at any time without penalty. Your child's participation will have no effect on his/her course grade. In fact, students will be told NOT to write their name on the surveys.

This activity is not designed to help any child personally, but will lead to a better understanding of drug pressure situations experienced by seventh grade students. If you agree to your child's participation, please fill out the bottom of this form and return it to the teacher.

Please sign the permission section below to agree to your child's participation. If you have any additional questions about this activity, please contact him/her via email or telephone.

For additional project information, please contact:
Carrie Carpenter, M.S.
Research Analyst
University of Maryland
617-998-1066

University of Maryland, Institutional Review Board
IRB Coordinator, Roxanne Freedman at 301-405-4212 or at rfreedman@umresearch.umd.edu

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Student's Name _____ Date _____

____My child has permission to participate in the study described above. (please check)

Parent Guardian Name (please print) _____

Parent/Guardian Signature _____

Student Assent Form - Revised

Project Title: Drug Use Resistance Self-efficacy Instrument for Young Adolescents

I state that I wish to take part in a study led by University of Maryland as part of the regular school drug prevention program.

The purpose of this survey is to gather information from seventh graders' using a questionnaire that asks about your confidence in saying no to drug offers from others as well as questions about your grades, your intention to use cigarettes, alcohol, and marijuana, and your family members' use of drugs.

This study involves a questionnaire that will take place during class. I will be asked to complete a pencil/paper survey about knowledge and attitudes toward drug use. I understand that I do not have to answer any question I do not want to answer and I am free to stop participating at any time. The survey will probably take me about 20-30 minutes to complete.

All information collected in the study is confidential, and my name will not be identified at any time. I will not put my name on the survey.

The researchers told me that they don't think there are any risks that will harm me. I understand that the study is not supposed to help me personally, but that the researchers hope to learn more about the beliefs of seventh grade students. I understand I am free to ask questions or to stop participating at any time, and that my participation will have no effect on my class grade. I also understand that if I have questions about my rights as a research participant, I can ask my teacher or my parent/guardian for the contact information of the researchers and the University.

Name (please print your name) _____

___ I agree to take part in the study.

Date _____

August 26, 2005

To Whom It May Concern,

I received permission to contact you from Mrs. Barbara Pearlman, MCPS Coordinator of Health Education. I am currently a graduate student at University of Maryland, College Park, and have been involved with the evaluation of MCPS middle school drug prevention programs in the past. Last year, with the much appreciated help of Mrs. Frieda Cooney, I conducted the first two phases, focus groups and pilot testing, of my dissertation research titled, "The Development of a Drug Use Resistance Self-efficacy Instrument for Young Adolescents". I am asking you to help me complete a research project by administering an instrument to your seventh grade health education classes.

Please administer the included survey to your seventh grade classes as soon as possible and **prior to** teaching the Project ALERT program. Barbara Pearlman has provided me with your name, and it is my understanding that you teach at least one but maybe two seventh grade health education classes. If you agree to help with this study, Barbara recommends that you administer the survey as soon as possible even before you start teaching health education if necessary. All necessary materials are included in this package of materials (parental permission slip, student assent form, survey, etc).

This final stage of research is consistent with our past data collection efforts and is fully supported by Barbara Pearlman and the University of Maryland Institutional Review Board. Since the survey administration will be part of the normal MCPS health education activities, MCPS is not required to seek parental consent or student assent for the data collection. However, University of Maryland's IRB committee has approved the research project dependent upon parental permission and student assent.

It should take no longer than 20-30 minutes for students to complete the survey. Students who do not wish to participate in the study and/or whose parents complete and send back the parental consent form indicating their exclusion from participation can sit quietly during this time. I have included an incentive for students for participating (pencils) and a small token of appreciation for you (Starbucks gift certificate – hopefully this is a good choice for most of you). Further, I will disseminate the results to participating teachers upon completion of the study. If you are unable to participate, please send the entire package back immediately so I can contact another teacher to help with the data collection.

Specifically, I am asking that you do the following:
1) Send home parental permission slips at least 5 days before the data collection to your seventh grade class(s)
2) Choose a day/time anytime before you begin teaching Project ALERT (as soon as possible is ideal)
3) Read provided instructions and administer the a **student assent** form and survey to eligible students (speak English as first language and returned completed parental permission slip)
4) Return the all materials **as soon as possible** in the **prepaid** envelope provided no later than **Friday, September 23rd.**

If you have any questions or concerns about the content of this letter please contact either Barbara Pearlman (301-279-3146) or me at 617-504-5810 (carriedph@gmail.com)
.

Sincerely,

Cc: Barbara Pearlman
Coordinator Health Education

Carrie M. Carpenter
Graduate Student
University of Maryland

****Please read this information to students before passing out the surveys****

Thank you for helping us with this survey. It has been developed so you can tell us what you may do in drug pressure situations. The information you give will be used to develop better health education for young people like yourself.

Please **DO NOT** put your name on the survey. You can mark your answers directly on the survey. You do not have to answer any questions you do not want to answer and can stop participating at any time. Make sure to read every question. If you have questions about any of the survey items, you may raise your hand and ask the teacher. If he/she cannot answer your question, please make the best possible choice or leave the answer blank.

The questions that ask about your background will be used only to describe the types of students completing this survey. The information will not be used to find out your name. **No names** will ever be reported.

You will **NOT** be graded on your answers and your answers will be completely anonymous because your name will not be on the survey. Once you have completed the questionnaire, put your pencil down and sit quietly at your desk. After everyone has completed the survey, we will collect the questionnaire.

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