Is it Social Problem Solving or Decision Making? Implications for Health Education

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ABSTRACT

This paper makes a case that decision making (DM) is not social problem solving (SPS) and DM is subordinate and subsumed within SPS. Both terms are defined and distinguished. Confusion between SPS and DM is widespread and has occurred for at least four decades. DM, not SPS, has been established as one of the seven National Health Education Standards (NHES). States adopt the NHES to fulfill their own state's health education standards; 62% of those states have overwhelmingly integrated DM into their health education curriculum standards and only one state has adopted PS. States have failed to master the ability to distinguish these two terms. Consequences of using imprecise definitions and not understanding processes could result in matching an inappropriate curriculum with the term, invalidating assessments, and compromising internal, construct and content validity. Adoption of DM at the federal, state and local levels also is alarming when trends of problems of youth are increasing worldwide. SPS is thoroughly defined, potential for implementation is reviewed, applications to health education curricula are provided, skill-based training and teaching strategies are noted, and applications to real-life situations are documented. A priority agenda for adopting SPS in public health and health education is provided.

IMPLICATIONS FOR HEALTH EDUCATION

Rarely in the history of public health and health promotion has there been a greater need to search for responsive prevention interventions. The need is partially predicated on the priority of our nation's transformation to a *health literate* culture. In fact, the former U. S. Surgeon General Galson made health literacy one of the nation's four top priorities of focus to address this country's public health concerns.[1] The concept of health literacy has been identified as an important goal of health education as supported by professional health education organizations such as the American Association for Health Education, the American School Health Association, the American Public Health Association and the Society of State Directors of Health, Physical Education, and Recreation.[2,3] According to the U. S. Department of Health and Human Services, it is important that people find, understand and apply information and services to enhance health.[4] Recently, the concept of "functional health literacy" has emerged as part of a nationwide health literacy campaign and is defined as the ability to respond to social situations and health information with a specific set of skills.[5] As part of the health literacy paradigm, one of four skills or characteristics of a health literate person includes *problem solving* (PS).[2,3]

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PURPOSE OF THE PAPER

The purpose of this paper is to distinguish between problem solving and decision making. Using a concept or term incorrectly is no trivial matter. For example, the primary issue in epidemiology is defining criteria as to "What is a case?"[6] Without listing inclusion and exclusion criteria a study cannot be replicated and both internal and external validity are threatened. Bandura[7] has given major attention to the same issue. He has chosen obscure words so readers do not assume they know the construct or term he is introducing. The obscure word forces the reader to become familiar with and learn the precise definition. Use of "common words" in the case of "problem solving" and "decision making" makes it more difficult to convey the exact meaning intended by the constructs or words because the reader already presumes he/she knows the construct or term(s) when in fact it may not be the case. Using the incorrect concept or term is tantamount to providing an incorrect diagnosis or erroneously thinking in pedagogy that every concept or term necessarily has been labeled and taught correctly.

THE PROBLEM: CONFUSION OF CONCEPTS

Social problem solving. One means of addressing the health literacy issue is through social problem solving (SPS), a term that originated in psychology and its connection to social learning theory. SPS is defined as a multidimensional, cognitive-affective-behavioral process that enables an individual to generate and select systematically from potential alternatives for a problem encountered in daily living, or to arrive at the "best" immediate or potential solution for a real-life situation.[8,9] SPS also is referred to as personal, intrapersonal and interpersonal cognitive processes as well as applied PS. It is not to be confused with artificial or laboratory PS that involves computer processing, medicine, or mathematics.[9] SPS has potential to be the *sine qua non* of behavior change programs for youth, as its general concepts and specific skills provide application that is transtheoretical and transbehavioral, such as

those problematic issues addressed in health education curricula[10] (e.g., weight control, substance abuse, sexual health, parent-child relations, violence, anger management, building self-efficacy, stress management;[9] cf. Pollock[11]). One of the predominant benefits of SPS is its utility to integrate, organize and assimilate information, skills, and rules from multiple sources as well as to continue the expansion of intellectual developmental tasks.[12,13]

SPS also emerged from pedagogy, due to the emphasis on social skill development and social competence. It is connected to a complex of other discrete, behaviorally-oriented social competencies that include, but are not limited to, fostering social support, expressing one's feelings and being sensitive to others' feelings, communicating assertively, negotiating and/or refusing risky behaviors, asking for help, evaluating risks and unhealthy social situations, controlling impulses, managing anger, reducing stress, and resolving conflicts.[14] Although training in these discrete social skills may enhance social functioning, they typically do not accentuate the meta-cognitive component provided by SPS, which emphasizes cognition as a mediator to solve problems and enhance behavioral adjustment.[15] Rather, SPS training uniquely addresses social incompetence, or a person's cognitive inability to apply SPS skills and to resolve problems systematically. In other words, SPS teaches children *how* to think rather than *what* to think, so that they eventually and ideally adopt appropriate and healthful social solutions on their own to solve idiosyncratic interpersonal and intrapersonal problems.[16]

Pollock[11] suggested that the changing social needs in the 21st century would require the development of PS skills. For that reason, she identified PS as a primary method of health instruction that could be applied for life once it was mastered. Pollock suggested that PS is a structured and deliberate process used when one is "faced by a need that cannot be easily satisfied or by a dilemma for which no good solution is readily apparent."[11(p. 145)] Frauenknecht and Black[9] concur that SPS is used when solu-

tions or options are not readily available in problematic situations or when a crucial real-life decision must be made.

Whereas Pollock framed PS as a method that is consistent with the scientific method, she does not confuse it with DM. Authors in more recent health education literature frequently use the term DM to refer to the same process described more accurately as PS.[17,18] Pollock also suggested that, although DM is subsumed within the PS process, these skills are related but distinct. DM occurs during several steps in the PS process, and uses criteria that are objectively based on current knowledge, beliefs, and values.[11]

Decision making. Historically, DM was defined for health education as a process used to make a conscious decision regarding whether or not to take action, or to choose one alternative over another.[19] DM is defined by decision theorists as a process used to make choices among contending courses of actions and includes the following steps: (1) identify possible options, (2) identify possible consequences for each option, (3) evaluate desirability of each consequence, (4) assess likelihood of consequences, and (5) use a "decision rule" that identifies the best option and maximizes well-being based on current beliefs and knowledge.[20] Whereas all of these steps are contained within SPS/PS, by no means do these steps enable one to engage in the entire SPS/PS process to solve problems.

SPS/PS and DM distinctions. To illustrate the distinctions between SPS/PS and DM, information provided in Table 1 compares Furby and Beyth-Marom's[20] theoretical DM model with six SPS/PS models currently used in youth-serving institutions or that have been applied to school health education programs. The one model of DM selected was chosen because it is based on DM theory and considered the correct model based on DM theory. Also, the intent of using one model was to demonstrate how DM fits within PS models.

Black and Frauenknecht's SPS Model,[13] the Michigan Model for Comprehensive Health Education's "POWER" model,[21] and Pollock's PS model[11] have been developed

Decision-Mak-ing Theory[18]	Social Prob-lem-Solving Model[7,11]	Elias & Clabby's[20]	Spivack, Platt, & Shure's[21]	Tisdelle & St. Lawrence's[22]	Michigan Model "POWER"[19]	Marion Pol-lock's[9]
	General Problem Identification	Look for signs of different feelings	Recognition a problem exists		Problem Identification	Defining the Problem
	Specific Problem Identification	Tell yourself what the problem is		Statement of the Problem		Data Gathering
	Problem Selection (DM)	Decide on your goal (DM)		Statement of the Goal		
Identify possible options	Alternative Generation (DM)	Think of as many solutions to the problem as you can (DM)	Generating alternative solutions to a problem (DM)	Generation of Alternative Solutions (DM)	Option Generation (DM)	Theorizing: Proposing Tentative Solutions (DM)
Identify possible consequences for each option; evaluate desirability of each consequence; assess likelihood of consequences	Consequence Prediction ▪ Set decisional criteria ▪ Match each solution with each decisional criteria (DM)	For each solution, think of what might happen next (DM)	▪ Appraising consequences of different possible actions ▪ Understanding causal relationships in behavior ▪ Assessing perspectives of other people in a given situation (DM)	Comparison of Solution Consequences (DM)	Weighing Consequences (DM)	Proposing Tentative Solutions (DM)
Use a "decision rule" that identifies the best option	Alternative selection (DM)	Choose the best solution (DM)		Selection of the best solution (DM)		Proposing Tentative Solutions (DM)
	Strategic Plan Implementation	Plan the solution; make a final check	Utilizing a logical, sequential process to reach a goal	Attempting the social strategy	Enact a Plan	
	Progress Evaluation	Try it and rethink it		Evaluation of the environmental impact	Reflect and Recycle	Verifying the Solution
	Reorganization and Recycle					

Note: DM = Decision Making

specifically for use in health education. The other three SPS/PS models have been applied as school-based group interventions by psychologists.[22-24] The first column lists the steps of decisional theory and compares these DM processes to the steps of the SPS/PS models. This table illustrates the previous point that, although DM is included as part of the SPS/PS process, it is not equivalent to the SPS/PS process. Table 1 also provides evidence that in some cases, health educators have correctly identified SPS/PS, as three of six models are applied to health education.

Given the distinctions in these definitions, theories and models, it should be evident that there has been continuous confusion between SPS/PS and DM. Such confusion can be traced back to at least 1976.[23] From the public health and health education literature, "decision making" is the predominant term given attention, whereas "problem solving" is the more appropriate overarching term that has been used in psychology since at least 1971.[8] Many health educators and national and state public health organizations have used the term DM incorrectly as the overarching skill that more precisely defines PS, and often and erroneously have used the terms interchangeably. Evidence of this confusion is seen as DM has been established as one of the seven National Health Education Standards (NHES).[4,5] The inclusion of DM as an NHES has resulted in further confusion as is evident from the number of states that have adopted the NHES to fulfill their own state's health education standards.

Information in Table 2 shows that all 50 states refer to the implementation of PS or DM, and that 62% of states have integrated DM into their health education curricular standards; only one state identifies PS in its health education standards.[25] If a criterion-referenced grading system was applied and 70% mastery was established as the criterion, states would fail to master the ability to distinguish between these skills. Additionally, some states refer to or include PS as an overarching curricular goal or as a sub-skill that supports another health education standard (typically DM or goal setting) or

use the terms interchangeably. For example, with regard to curriculum development, one state suggests the following benchmark and teaching activity for DM: "Explain and practice a model for decision making that includes gathering information, predicting outcomes, listing advantages and disadvantages, identifying moral implications, and evaluating decisions. Students design a poster showing the steps used to solve a problem and post it in the classroom."[26(p.36)]

As alluded to earlier, whereas some might claim this confusion in health education is merely semantics, the imprecise definition of terms and confusion of processes could result in selecting inappropriate or misaligned programs or curricula, as well as invalidating assessments. These errors in program development, implementation and evaluation would comprise serious errors in internal, content and construct validity,[27,28] thus constituting an example of type III error (i.e., program implementation error).[10] If a practitioner lacks a clear means of classification, then *any* process is fine because there is no standard.[29] Interestingly, one state currently aligns curricular components and an assessment outcome in the following way: (a-Standard) "Demonstrate the ability to use critical thinking and decision making to enhance health;" (b-Rationale) "Problem-solving processes are lifelong skills needed in order to implement and sustain health enhancing behaviors;" (c-Benchmark): "Students will upon end of Grade 8, individually and collaboratively apply problem-solving processes to health issues."[30(p. 10)] In this instance, a parent, teacher, or administrator would be unsure as to which specific skill was to be assessed, and if the assessment item was aligned with PS, DM, or both. Given that many states require standard-based assessments as part of the education reform movement,[31] this issue is problematic. Assessment items that propose to measure a student's ability to apply DM might in fact be assessing a different construct. Failure to develop criteria correctly or to operationalize terms and/or partial out variables accurately for test construction leads to erroneous conclusions.[28,32]

Consequently, many state agencies have not only adopted standards and curricula that are ill-defined, but also are using measures that are flawed.

A HEURISTIC EXAMPLE OF ONE SPS MODEL

To dispel the confusion between these skills, one theory-based model of SPS pertaining to youth is found in Table 1 and Figure 1. A youth-based focus was selected because these terms have been embedded within the student-based standards and many of the school-based health education models, assessment tools, and textbooks.[3,17,18] Although this example is school-based, this issue of confusion has broader implications for community health educators who work with youth-serving organizations and public health practitioners who work with adult populations.

The Black and Frauenknecht SPS Model[9,13,33] includes an overarching component (problem orientation) and two processes: (1) the evaluation process, and (2) the automatic process. This model suggests that SPS is multidimensional and consists of several different, but somewhat interdependent components.

Problem orientation. Problem orientation is the motivational component of SPS.[8,9] Whereas it is not considered a skill, it is the willingness to engage in the effort and expend the time and energy required for the success of the process. This cognitive set reflects one's self-efficacy of the SPS process, the belief that s/he has the capability to solve problems, and that SPS will help solve the problem. Without this positive disposition to engage in the SPS process, there is less likelihood that a person will attempt to cope with situational problems should they occur.[8]

The evaluation process. Theoretically, the more formal evaluation process is used when someone is confronted with a problem unlike one they have previously solved. This process allows one to move systematically through a series of sub-skills as follows: (1) general problem identification, (2) specific problem identification, (3) problem selec-

States	Problem Solving (PS)	Decision Making (DM)
Table 2. Inclusion of Problem Solving and Decision Making in State Health Education Content/Curricular Standards		
Alaska		b
Alabama	c	b
Arkansas		a
Arizona		a
California	b	b
Colorado		a
Connecticut		a
Delaware		a
Florida		a
Georgia		a
Hawaii	c	a
Idaho		b
Illinois	c	a
Indiana		a
Iowa	Content-based Curriculum Only	
Kansas		a
Kentucky	c	b, c
Louisiana	b, c	b
Massachusetts		a, b
Maryland		b
Maine	Content-based Curriculum Only	
Michigan	b	a
Minnesota		a
Missouri	b	b
Mississippi		a
Montana	b	a
Nebraska	c	a
New Hampshire		a
New Jersey	c	b
New Mexico		a
New York	b	b
Nevada		a
North Carolina	b	a
North Dakota	a	a
Ohio	Content-based Curriculum Only	
Oklahoma	b	a, b
Oregon	b	a
Pennsylvania		b
Rhode Island	c	a
South Carolina		a
South Dakota	b	b
Tennessee		a
Texas	b	b
Utah	b	b
Vermont	b	a
Virginia	b	b
Washington		(minor reference to decision making)
West Virginia		a
Wisconsin	c	a
Wyoming		a

Notes: "a" indicates use of *PS* or *DM* as a state standard for health education; "b" indicates use of *PS* or *DM* as a sub-skill that supports a content standard; and/or "c" indicates use of *PS* or *DM* as a school-based curricular goal or a health education program goal (apart from the definition of "health literacy").

Figure 1. Black & Frauenknecht's Social Problem-solving Model
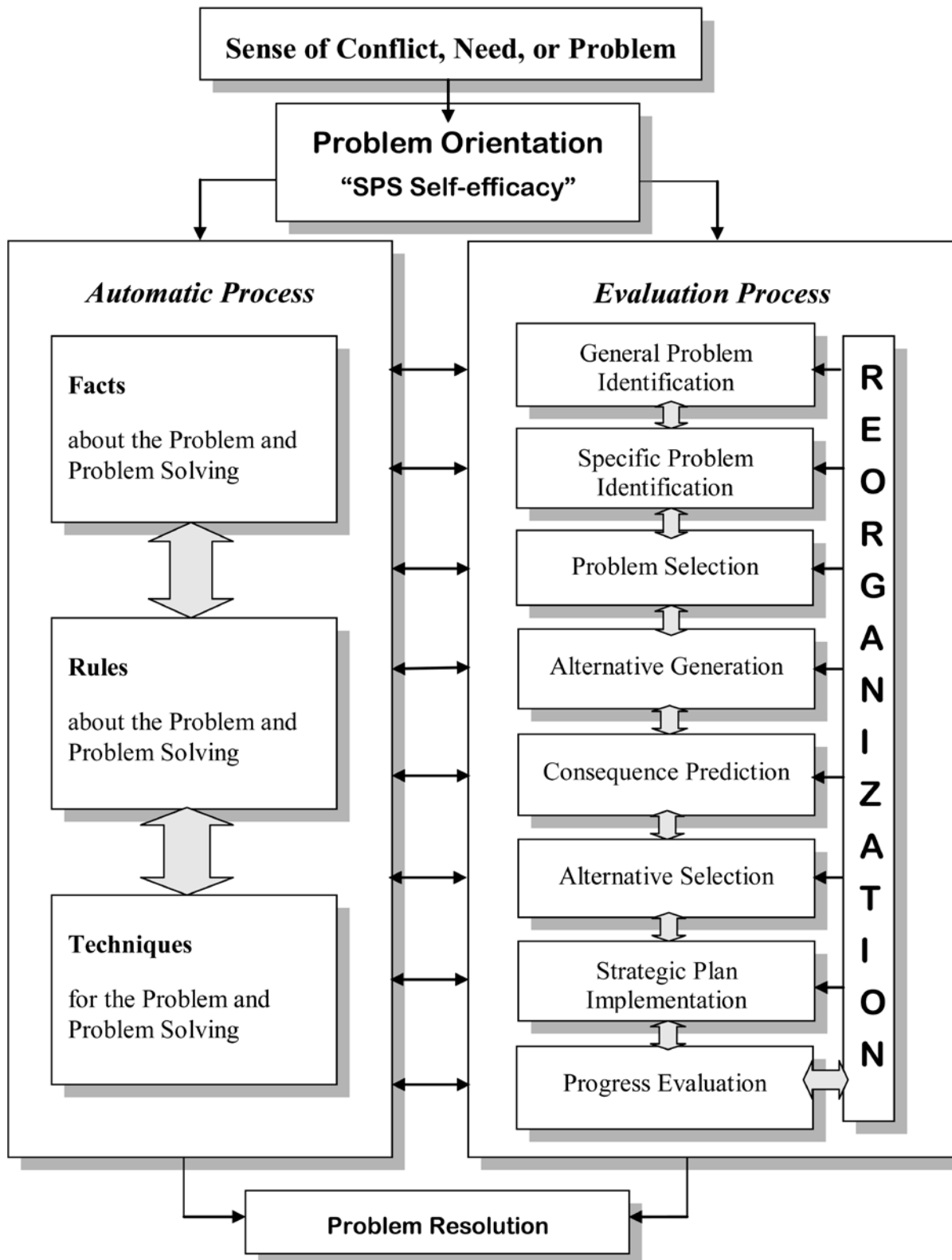
tion, (4) alternative generation, (5) consequence prediction, (6) alternative selection, (7) strategic plan implementation, (8) evaluation of progress, and (9) reorganization.[9] The first three steps are skills that help one recognize that a problem exists. These steps are not included in the theoretical DM process, although during the step of problem selection one would decide to select and solve the most salient problem. Steps four through six of this model (alternative generation, consequence prediction, and alternative selection) include DM sub-skills, and so are most closely aligned with the steps of theoretical DM (Table 1). More specifically, the SPS sub-skill of consequence prediction requires the application of "decisional criteria," or the use of "givens" that must be included for effective problem resolution (i.e., healthy, legal, and cause no harm to self or others, etc.). Other decisional criteria specific to the problem also must be included. The next step of the model requires that a strategic plan of action is developed (goal setting), in which one identifies a measureable objective that answers who, what, when, where and how the success of the solution will be determined. Once the solution is enacted, the next step, progress evaluation, can help to determine if the intended solution was successful or unsuccessful by answering the questions in the strategic plan. If it is determined that the solution is unsuccessful, the last step is reorganization, which is systematically "recycling" backwards through the SPS process, step-by-step, asking questions specific to each step to determine which step resulted in process failure.[9] Although it is evident that DM is a critical part of SPS, it is *only part* of the total process.

The automatic process. Once young people learn to apply the systematic, step-by-step approach afforded by the SPS process, they can logically integrate experiences, working through problems and conflicts in hypothetical and real-life situations.[9] Theoretically, after mastering specific SPS skills, these become so automatic that an individual could apply a learned response or a strategy that has been effective in solving

a similar problem previously.[13] Especially in a crisis-type predicament, SPS provides a framework for sequencing cognitive activity that might be lost under excessive stress.[34] Black and Frauenknecht's[9] (Figure 1) automatic process suggests that an individual can reapply strategies that previously have effectively solved problems. One could use "facts" or personal knowledge about the SPS process or details about the resolved problem, "rules" that include values and beliefs that govern personal decisions, and "techniques" or procedures that were successfully applied to a similar problem. This automatic reapplication of SPS to a similar problem allows for habituation and lets one operate according to the "law of least effort" until it is determined that the automatic process is not effectively solving the problem. In that instance, the more formal SPS evaluation process would be applied. Detailed and heuristic illustrations of an applied SPS model are available.[9,13]

As one can determine from this description of the theoretical SPS/PS method, DM and goal-setting skills are included in the application of SPS/PS, but are not equivalent. Whereas one cannot effectively progress through these SPS/PS models without using DM skills, DM is not an equivalent course of action to PS. The contention is that health education standards, curricula and assessment items be developed more carefully and accordingly to the specific skills and sub-skills that are desirable and within the context of helping adolescents apply SPS/PS to behavioral health problems.

THE POTENTIAL OF SPS/PS TRAINING FOR YOUTH

One benefit of SPS/PS is its theoretical generalization to numerous situations and pedagogical application to diverse problems across different levels of prevention.[35] SPS/PS skills function within primary prevention programs to develop or enhance mediators within well-functioning youth, to provide a repertoire of coping skills for use later in life, and to prevent harmful outcomes from occurring/recurring.[36,37] Schools often provide these opportunities because of access

to large numbers of asymptomatic youth. Secondary prevention programs help at-risk youth apply SPS/PS to resist, delay, or terminate health-compromising behaviors such as substance use, aggression, and sexual promiscuity.[38] Tertiary prevention programs, often provided in both school and clinical settings, provide SPS/PS as a treatment protocol that help youth with internalizing disorders (e.g., depression) or externalizing adjustment problems (e.g., delinquency).[39]

Within these three prevention categories, SPS/PS is generalized as a single treatment to different problematic situations. For example, if adolescents used a SPS/PS approach to solve a problem successfully regarding weight gain that resulted from physical inactivity (secondary prevention), they might be more likely to apply this same approach to maintain weight loss by improving dietary choices (primary prevention). Although these circumstances may appear to be different, the application of SPS/PS would provide a general approach to resolving problems systematically across different prevention categories and contexts. Developing SPS/PS as a means of framing personal and social issues, conflicts and a priori decisions, enables a young person to generalize the process to a variety of contexts with adequate training.[40,41] The generalization of SPS/PS skills from one situation to another, however, has limited support resulting from lack of rigorous *in vivo* research.[23,41,42] In fact, generalization of skills to other settings and situations has become a primary goal of most social competence interventions.[39]

SPS/PS has potential use in combination with other social competence applications. In much of the literature, SPS/PS has been evaluated with youth in conjunction with other social skills, making it difficult to "tease out" effects of different program components. Research supports the effectiveness of SPS/PS when situation-specific skills are included in the intervention.[24,40,44-47] For example, young people can apply SPS/PS as a general primary prevention, stress management technique to determine how to deal with excessive stress that can poten-

tially exacerbate tobacco, alcohol and other drug use.[39] In this case, programs designed for adolescents would apply SPS/PS in combination with other social skills such as the ability to refuse or negotiate peer pressure, if the SPS/PS process determines that poor communication is the problem. One case in point is Botvin's Life Skills Training Program that helped children resist tobacco by combining problem resolution, stress management, and communication skills.[48] Another school-based secondary prevention program integrated SPS/PS with other social competence skills, and effectively prevented excessive alcohol use and increased intentions to abstain from using cigarettes, alcohol and marijuana among young adolescents.[49] In more extreme cases where tertiary intervention is indicated, as in the case of drug abuse treatment programs, instructing young people to use generic social skills such as SPS/PS without content-specific material such as dealing with environmental cues to use drugs may have minimal impact.[48,49]

Application of SPS to health education curricula. Because SPS/PS is theoretically connected to social learning theory and social skill development, the multiple benefits of SPS/PS training make it a promising strategy that addresses the most current health issues concerning youth. In fact, "SPS may be the single most important social skill that a young person can acquire."[10(p153)] School-based health education is an especially appropriate and timely venue for the development of SPS/PS skills among children and youth. According to the American Academy of Pediatrics' Committee on Psychosocial Aspects of Child and Family Health,[50] there is a constellation of new morbidities that place young people at risk, such as problems at school that include attention disorders, learning disabilities, bullying, and violence; anxiety and mood disorders; adolescent suicide and homicide; access to and use of firearms inside and outside of the home; drug and alcohol abuse; human immunodeficiency virus and acquired immunodeficiency syndrome; and media's effects on violence, obesity, and sexual activity. These morbidities frequently are attributed to

underlying problems that include mental health problems (e.g., anxiety, depression), use of substances, learning problems, and family and socioeconomic conditions.[51] SPS/PS training has the capacity to help youth resolve potentially negative consequences and distress related to difficult life situations by helping them gain a sense of control over their lives, take responsibility for themselves, and increase competence with successful coping. This success also leads to an enhanced sense of self-efficacy, critical to a young person's psychological well-being.[52]

SPS/PS skill-based training and teaching strategies. The psychology literature provides the research base for SPS/PS as it applies to children and youth, a summary of which is provided by Frauenknecht and Black.[10] Evidence supports that both symptomatic and asymptomatic youth can develop SPS/PS skills, especially when treatments are of longer duration (i.e., 4-23 hours). Transfer of skills to behaviors is more challenging, as SPS/PS training among youth has had moderate success when mediating behavioral problems. This review also notes best processes for SPS/PS over the past three decades.[10]

SPS/PS training can provide essential and timely developmental opportunities for reasoning and critical-thinking abilities in social contexts.[53] Theoretically, age is an important consideration in teaching SPS/PS skills. According to Shure,[54] children in preschool through grades three can begin to develop prerequisite skills for SPS/PS training (i.e., empathy and language skills) as well as the ability to think of alternative solutions. Around grade four, children can develop "dynamic orientation" skills or an understanding of the motives of another person's behaviors. However, to solve abstract and *in vivo* problems children must be developmentally "ready" with the prerequisite skill of formal operational thinking (according to Piaget, typically 11-15 years of age).[55] This skill allows them to recognize causality, or the cause-effect connections between a solution and potential consequences. It also enables children to engage in "means-ends"

thinking, or the ability to develop a step-by-step sequence of action to reach a specific goal and recognize impending obstacles to reach that goal.[54]

Other training techniques have been developed by educational psychologists and teachers, with the intent of using active participation in the learning process.[22,23] These specific teaching actions, such as modeling, demonstrating, enacting, providing feedback and reinforcement, and writing steps as ways to build self-efficacy are identified in social competency training and linked to social learning theory.[17,48] Uses of discussion and inquiry help students recognize the relevance that SPS/PS plays in their personal and social development. Making SPS/PS personally relevant to current life issues of preadolescents and adolescents such as weight reduction, stress management, and substance use will motivate them to learn these skills.[17,18] Also, showing connections between or among different skills (e.g., PS, DM and goal setting) will increase a young person's sense of efficacy to engage in a new, undeveloped skill. For example, a child must be able to set goals in order to develop a strategic plan for implementing a solution to a problem.

Regardless of the SPS/PS model used, the practitioner must present and explain all of the specific skills or distinct steps separately and provide examples of each in real-life situations.[17,39] In the SPS/PS curriculum developed for young athletes that utilized the *POWER* model, the skill of general problem identification was discussed as the need to alert and sensitize youth to internal and external cues (e.g., thoughts, feelings and actions) that indicate the existence of a personal or interpersonal conflict.[56] During one activity, athletes identified personal cognitional, emotional, and behavioral signals from coaches, friends, and parents that could help them realize that they had a time-management problem that needed to be solved.

Once all skills are explained, each must be modeled or demonstrated within the entire sequence of steps, step-by-step. In the *POWER* curriculum for athletes, a problem

that an athlete had with time management and excessive stress was used as a demonstration of the entire SPS process (Table 1).[21,56] The specific *P*roblem was identified as the lack of time for all school and sport activities. *O*ptions for this problem were generated according to the rules for brainstorming and then *W*eighed according to the list of "decisional criteria" established to predict consequences. After the best option was selected, athletes *E*nacted a plan using a five-part behavioral objective. Finally, once the solution was tried, athletes *R*eflected to determine if the solution worked and, if not, *R*ecycled through steps in the SPS process that needed to be revisited.[56]

The next task involves practice and rehearsal of skills. Learning SPS/PS skills has been enhanced by such teaching techniques as modeling (illustration and demonstration) and rehearsal through role-play. Sarason and Sarason[57] tested two modeling strategies in an urban high school classroom; one experimental group used live-model role plays and the other employed videotaped role plays of the same models. The live modeling group performed more favorably on evaluating a problem at post-training than the videotaped and control group. However in another study that compared modeling with discussion, there were no differences in SPS performance after training.[58] Role-play also is a strategy that uses verbal self-instruction to direct SPS steps internally and is considered to be the most effective teaching mode for SPS practice.[59] To ensure that all students benefit from this technique, it is important to have all persons individually script their responses to situations before small group work is attempted.[17] Also, for younger children, writing skits and plays is less intimidating than acting out or performing their own personal problems in front of peers, and may be a useful prerequisite technique to actual role play.

To determine if modeling plus role-play was more effective than modeling alone, McClure and colleagues applied both strategies to a group of normal elementary school children.[35] Children who participated in role-plays and discussion tended to perform better on a PS measure than subjects who participated in the modeling and control groups. In another study, Elias and colleagues compared a directed approach (modeling and verbal rehearsal of steps and strategies), a discovery approach (induction through guided questioning and exposure to and practice with relevant situations), and a standard didactic approach to teaching SPS/PS skills to third-grade and fourth-grade students.[60] Results indicated that students who participated in the directed as well as the standard condition showed greatest improvements in SPS/PS and expectancy skills. At three-month follow-up, no differences were found among the three approaches, but skill development was sustained.

Finally, it is advantageous to provide positive feedback and reinforcement throughout training so students understand what they did correctly and what they can do differently. For example, when students identify multiple alternative solutions to a problem by brainstorming during a role-play, they are praised for the solutions they identified and encouraged to "prime the pump" or look at the problem from another's perspective for additional options.[61] In addition, instructors should reinforce SPS/PS successes in order to develop students' sense of efficacy or problem orientation.[9] These skill-based steps and strategies (i.e., modeling, role play, feedback, and reinforcement), when used in combination, have been found to produce significant changes in both skill acquisition and behavioral outcomes.[62]

Applying SPS skills to real-life situations. The school environment also could provide opportunities for informal lessons or *in vivo* training that supplement formal training.[10,16] Once children have mastered the SPS/PS process in artificial conditions, *in vivo* situations would allow trained school personnel (e.g., teachers, coaches, counselors, school nurses, administrators) to apply "dialoguing" or facilitative questioning to guide students through SPS processes when real-life social problems arise.[16] For example, when two students disrupt a middle school health education class activity with verbal taunting, the trained teacher can initiate a resolution by asking the students questions to help them identify the problem and engage them in the process used to solve the conflict. Pellegrini and Urbain[16] suggested that training in real-life situations might be one essential ingredient that ensures children will apply acquired SPS/PS skills to social interactions. Weissburg and Gesten[59] evaluated effective school-based SPS/PS training programs and found that "dialoguing" was the key approach for teaching a child to use SPS/PS and solve problems independently.

More detailed information about SPS/PS skill development and behavioral change research over the past two decades is available.[10] Two innovative school-based SPS programs are described, including their core elements and evaluations. Finally, given the wealth of information in the literature, common "best process" elements required to teach SPS meta-cognitive skills effectively are provided.

SUMMARY

This review of SPS/PS and DM has raised two questions: (1) Are these two processes (SPS/PS and DM) synonymous?, and (2) Is the confusion a matter of semantics or does it create serious problems in the field? Given the theoretical underpinnings of both SPS/PS and DM, it makes no sense to think that these two processes are equivalent or synonymous, although they are related. It is not appropriate to use the two terms interchangeably. Confusing the terms leads to inefficiency, problems related to content and construct validity (Type III errors), and inappropriate conclusions about efficacy. SPS/PS is the overarching term, whereas DM is subordinate to SPS/PS and subsumed within the SPS/PS process. In addition to these questions, a timely opportunity exists to showcase the discipline of health education and its connections to behavior change theory (social learning theory) and development of social competency. Secretary of Education Arne Duncan has identified the adoption of rigorous standards as one of four areas of educational reform to impact the nation's schools.[63] In the era of standards-based education and assessment

practices, this matter of confusion cannot be overlooked or tolerated. Leaders in the health education profession at national and state levels need to revise both the professional and student standards to reflect the theoretical, methodological and practical differences between SPS/PS and DM. Those in health education have an opportunity to correct these standards by adopting SPS/PS as an overarching standard that subsumes DM and goal setting and clarify the confusion and misconceptions that have existed. Once the confusion in professional and state standards is resolved, SPS should be mandated as part of health education curricular implementation at all levels.

It is recommended that this problem be addressed in several ways. First, the International Union for Health Promotion and Education (IUHPE) has prioritized efforts in global health promotion, one of which is to support the development of core competencies for health education.[64] These competencies should include SPS/PS in extended training opportunities to the practice of health education, health promotion and public health. Second, at the national level, the Centers for Disease Control and Prevention's Division of Adolescent and School Health could spearhead a movement that supports SPS/PS as part of the school health education movement, much like they did in the late 1980s when Kolbe and Allensworth promulgated the Coordinated School Health Program model.[65] Such an initiative might begin with charging a task-force to identify the applications of SPS/PS to health education practice in schools that might serve as a catalyst to its acceptance and implementation. Third, at the national level, the professional organizations that approve and/or accredit health education programs that prepare candidates for the profession, could develop competencies and/or standards that correctly identify SPS/PS as a critical skill to be mastered and that has overarching application to professional practice and personal life. Fourth, national professional organizations that are responsible for the establishment of K-12 student standards for health education should replace the DM and

goal setting standards to be reflected in the overarching skill of SPS/PS, which contains each as sub-skills.[3] Fifth, many states have based their health education standards on the National Health Education Standards[25] so that, likewise, states should re-evaluate these for the more accurate inclusion of "PS" rather than "DM."[2-3] Sixth, research should be conducted to determine if skill sets and behavioral outcomes differ when directly comparing DM versus SPS. Finally, researchers should become familiar with standardized and reviewed measurement instruments of SPS.[9]

Constructive efforts are needed now to correct this confusion. By doing so, better programming can be supplied to youth confronted with social problems and dilemmas. If the problem of confusion is ignored, the ability to reach children and to help them effectively will be minimized.

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