FROM THEORY TO ACTION: FRAMEWORKS FOR IMPLEMENTING COMMUNITY-WIDE ADOLESCENT PREGNANCY PREVENTION STRATEGIES

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We hope that this monograph is found to be useful to program developers, funders, researchers, and others as they attempt to develop theoretically-driven prevention programs aimed at improving the lives of young people throughout this country. We also hope that this monograph will be useful for training practitioners and researchers in the prevention of adolescent pregnancy prevention.

FROM THEORY TO ACTION:

FRAMEWORKS FOR IMPLEMENTING COMMUNITY-WIDE ADOLESCENT PREGNANCY PREVENTION STRATEGIES

I. Introduction to Theoretical Models

Over the past three decades, the American public has increasingly recognized the challenge of reducing the United States' high incidence of adolescent childbearing. During this period, researchers documented key ingredients prevalent in the most effective pregnancy prevention strategies, as well as factors that serve as antecedents to this challenging issue. Ingredients for program success include a strong anchoring in a theoretical framework, depth and duration of program exposure, and well-trained, committed, and enthusiastic staff.[1] The purpose of this paper, *From Theory to Action: Frameworks for Implementing Community-Wide Adolescent Pregnancy Prevention Strategies*, is to begin a collaborative process among theorists and program planners and staff members. While it is our intention to assist program planners and staff members in integrating theoretical models into their programs when and where they may exist, it is also our goal to have program staff feel comfortable in constructing and adapting appropriate theoretical frameworks for their adolescent pregnancy prevention efforts. That is, it is our belief that theory and practice mutually inform one another.

For the past thirty years, theory and practice have mostly been viewed as separate undertakings within the field of adolescent pregnancy prevention. This document serves as a guide for program planners and other staff to integrate theory into practice. Doing so requires several steps:

1) Identifying the theoretical assumptions reflected in their programs,
2) Developing program interventions that fit these assumptions or testing these assumptions with their current programs, and
3) Constructing new theoretical and programmatic understanding of what works and does not work in teenage pregnancy prevention.

This document also aims to support program planners and direct service providers in assessing theoretical frameworks that are relevant to the issue of adolescent pregnancy prevention and the types of interventions that they provide in their communities.

Why are theoretical frameworks important for my program?

In reviewing the extensive literature produced by pregnancy prevention programs across the last three decades, it is clear that theory has played an important role in the development of some of the most effective approaches, including such well-known programs as "Reducing the Risk" and the "Teen Outreach Program."[1] Nonetheless, these programs, like many others burdened by the everyday work of delivering services, are often unable to fully document, and at times, articulate the theoretical concepts upon which their interventions are based. As a result, program planners are not able to review what the theoretical underpinnings of various pregnancy prevention programs are, which ones have demonstrated to be most effective, and which most represent their own program priorities, mission statements, resource capabilities, and/or theoretical positions. In contrast, other program staff may not be even aware of theoretical frameworks and their use in helping to develop more effective programs that take into account what psychologists, sociologists, and other researchers have been able to document as influencing human behavior and relationships.

What is the role of theoretical frameworks in my work?

In conducting this review, we recognized that program planners and direct service providers have an enormous range and number of theoretical frameworks to work with in their quest to develop and implement programs that will proactively influence positive behaviors among young people within the context of their own communities. This monograph brings together in one place a full range of contemporary theoretical frameworks that serve as program models, thus enhancing their accessibility to planners and providers. While all health promotion practitioners who are involved in some way with programs that aim to change such complex behaviors as too-early childbearing incorporate theoretical ideas into their practices, they do so to different degrees and with varying levels of understanding and acknowledgement.

It is our objective to assist practitioners, where necessary, in identifying the theoretical assumptions they use and developing a clear understanding of how these theories, and the program models that are built from them, can be advantageous to their work. While it is our goal that this document will streamline these choices and provide guidance on which theories are most appropriate for any given program, this is one of many goals. We also hope to recognize program planners and direct service staff members as theorists themselves. It is these individuals who are most able to evaluate the ways a given program and its theoretical assumptions make sense. And further, to assess how to adapt the programs themselves and the theoretical assumptions upon which they are based to better serve the larger communities and programs working with the shared goal of ameliorating unintended teenage pregnancies.

A Brief Historical Context: Understanding Teenage Pregnancy and Prevention Activities

As researchers and programs planners have increased their understanding of the multiple "antecedents" to teenage pregnancy[2] greater focus has been devoted to creating programs that effectively respond to these contributing factors. Antecedents include both "risk-factors" that increase one's chances of becoming pregnant and "protective factors"[2] those that reduce one's chances. While identifying antecedents does not predict pregnancy outcomes, it does provide an understanding of the social lives, context, and behaviors of adolescents and what they need in order to delay early childbearing. Antecedents, by definition, are correlated with outcome behaviors[2] such as initiation of sex, use of contraception, and pregnancy. Some of the common antecedents relate directly to sexual activities (e.g., teenagers' knowledge, attitudes, and beliefs about sex), and others do not (e.g., levels of poverty, academic success or failure, and parents' level of education).

In the search for pregnancy prevention programs that work for adolescents, a great variety of approaches have been tried—many of which followed the first wave of programmatic efforts aimed at helping those adolescents who were already pregnant or parents. In the 1960s and 1970s, professionals pursued family life education strategies for primary prevention, reflecting their assumption that all adolescents were "at risk" based on a lack of sufficient knowledge. Thus, the first generation of pregnancy prevention efforts addressed antecedents by providing adolescents an expanded knowledge base. The knowledge base included teaching adolescents about different methods of birth control and the need for protection against STDs, and also sought to inculcate positive attitudes towards the use of birth control. Interventions based on this approach were typically restricted to presenting information on adolescent physical development and methods of birth control.

From the mid-1980s to the early 1990s, the narrow focus of these efforts proved to have only limited results, and attention turned to developing skills-based curriculum programs that emphasized social interactions over individual capacities.[2] These programs emphasized improving the communication and negotiation skills of adolescents. Such skills were intended to help teenagers remain abstinent, or, in the case of those who were already sexually active, to help them negotiate the use of birth control with their partners and to locate and access contraceptives. Some of these programs were abstinence-only programs, others were more comprehensive programs that discussed both abstinence and contraceptive use. Abstinence-only proponents assume that exposing young people to contraceptive information would dilute or nullify the abstinence message and may encourage sexual activity. The debate as to whether adolescents should be exposed to both messages continues to be argued in local communities, states, and at the federal level. Interestingly, several of the most successful curricula, such as Reducing the Risk and the Teen

Outreach Program, have demonstrated that adolescents are able to reconcile a dual message: one of delaying sexual relations wherever possible *and* one of adopting the use of protection if they do engage in sexual relations.[2] Regardless of whether a program curriculum is abstinence-only or more comprehensive in nature, research has clearly shown that, while knowledge is important, knowledge alone is usually insufficient to create or sustain behavioral change. Programs that are skills-oriented and theory-driven have been shown to be more likely to succeed.

Along with early educational efforts to tackle the issue of teen pregnancy in the 1970s and 1980s, a parallel focus was adopted based on the premise that some adolescents were at higher risk than others for early childbearing. Thus family planning programs were designed to specifically address the needs of sexually active teens in an effort to reduce the incidence of adolescent pregnancy.[2] Similarly, this approach depended on both improving the knowledge base of teenagers and increasing access to birth control services. While improved access to contraceptive care (particularly condoms and the birth control pill) has had a significant impact on reducing the incidence of adolescent childbearing, a large number of adolescents continue to remain at risk[2] either because they do not use birth control at all, they select ineffective methods, or they use contraceptive methods ineffectively and/or inconsistently.[3] In this respect, adolescents are not that different from adults in terms of planning for childbearing; nearly two-thirds of adult women do not plan their pregnancies, compared to 85% of teenagers.[4]

In the early 1990s, a third generation of efforts consisted of attempting to bolster the motivation of adolescents to delay childbearing by expanding and improving the life choices and future opportunities open to them. Generally identified by the term "youth development," these programs address non-sexual antecedents and attempt to provide teens the skills and opportunities they need to secure greater life options and play meaningful roles in their communities. These programs often consist of mentoring programs to bolster adult-adolescent relationships, service learning or volunteer community service programs, and vocational training to increase adolescent career options. The idea behind incorporating such programs into or linking them with pregnancy prevention programs is to help teenagers begin to develop a fuller sense of self and a greater exposure to wider horizons, in the hope that early childbearing will become a less attractive option. Evaluations have clearly documented that the programs reduce sexual activity and teen pregnancy.[5]

Used as a pregnancy prevention strategy, youth development has received growing attention, though clearly it also takes longer to fully implement those types of interventions than more traditional ones in the field of family planning, such as comprehensive family life education. Moreover, although many

communities have a variety of recreation programs, Girls' and Boys' Clubs, YMCAs and YWCAs, and other youth-oriented organizations, more needs to be done to connect these programs in an effort to deliberately construct adolescent pregnancy prevention strategies. Strategies need to include family life-related information, skill building (e.g., negotiation, refusal, planning), and access to contraceptive services. Girls, Inc.[6] represents an important example. The program goal is to motivate girls to make smart choices—either choosing to postpone sex or, if not, using effective protection against pregnancy and disease. The program incorporates a developmental and sequential approach to adolescent pregnancy prevention, with curricula first introduced in the elementary school, additional learning experiences in middle school, and a high school-based program that also recognizes that some of the participants may also need referrals to health services. Girls, Inc. complements these educational program components with additional activities structured to expand the life opportunities of young women. For example, their "OpSmart" program teaches science, math, and relevant technology to girls. What makes Girls Inc. unique is its age-phased program that provides appropriate skills, personal tools, peer support and complete information as girls become developmentally ready for additional skills. In early years, they teach communication skills and move into self-reliance, and as older teenagers, they provide information. The program is based on theories of developmental stages, research, and the realities of girls' lives. Furthermore, the program builds on research that has clearly demonstrated the protective quality of adolescents who feel a sense of connectivity to adults in their lives.[7]

As the issue of adolescent pregnancy prevention continues to be one that often evokes controversy, communities are often tempted to pursue youth development strategies that are devoid of family life education and/or contraceptive access. However, proponents believe that all three components (e.g. equipping young people with knowledge and skills, including messages regarding both abstinence and contraceptive information, and ready access to teen-sensitive clinical services ((including STI and HIV/AIDS screening and care)), and offering a wide range of such youth development strategies as school-to-work transition programs**,** mentoring programs, and community volunteer placements[8]) are needed in order to have the greatest positive impact. Thus, beginning in the late 1990s, many in the field of adolescent pregnancy prevention recognized the need to combine *all* these strategies into a comprehensive package.

Communities have also come to realize that the complexity of the issue, and the comprehensive strategies needed to address it, requires a collaborative effort; no single agency or organization can mount the wide-ranging effort that is truly needed to make more than a dent in the problem. New community-based interventions are directed at engaging a wider group of stakeholders, including representatives from the

business sector, faith-based institutions, schools in the community, parents, and—not least—teenagers themselves.[9] In casting a wider net, the hope is that a broadened sense of "ownership" of the adolescent pregnancy prevention issue leads to the development of widespread, inclusive, and viable solutions that are more specifically tailored to the unique needs and resources of the adolescent, as well as his/her community.

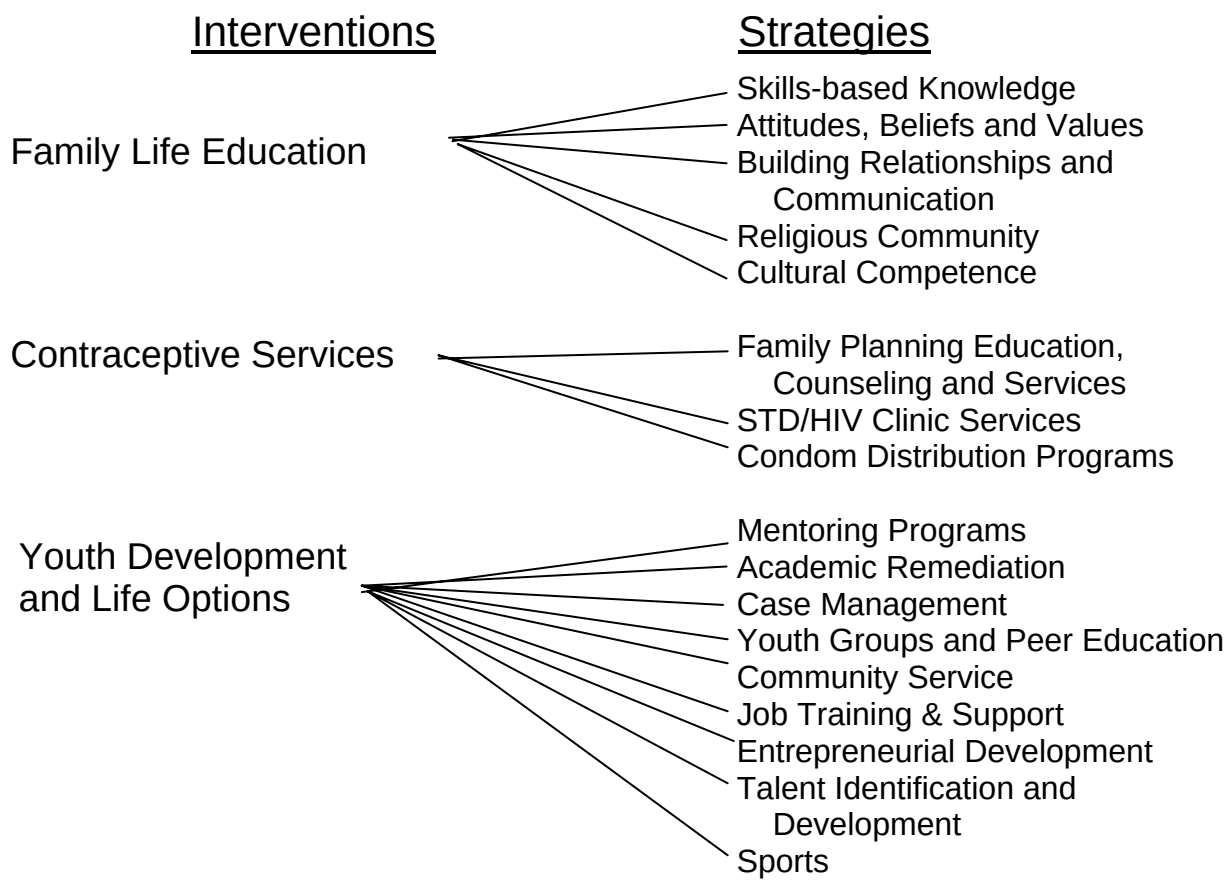
The underlying assumption in this new generation of programs is that combining concurrent strategies and programs will create a synergistic effect. For example, the multi-year adolescent pregnancy prevention program, developed by Dr. Michael Carrena and sponsored by the Children's Aid Society in New York City, combines: 1) a semester-length course on skills-based family life education, 2) comprehensive health care, including mental health and reproductive health services and contraception, 3) individual academic assessment, tutoring, help with homework, preparation for standardized exams and assistance with college entrance, 4) a work-related intervention that includes a job club, stipends, individual bank accounts, employment and career awareness; 5) self-expression through a culture and arts program, 6) recreation and sports activities, and 7) scholarships for a college education for participants who graduate from high school. This synergy of different components is intended to produce the kind of sustained effort thought to be needed to have any real effect on the complex syndromes that surround adolescent pregnancy.[11] The program provides a clear message about avoiding unprotected sex and early pregnancy. A rigorous evaluation of the program in six different sites showed that among girls the program significantly delayed the onset of sex, increased the use of condoms and other effective methods of contraception and reduced pregnancy rates, although the program did not reduce sexual risk-taking among boys.[11]

Community-focused approaches—rather than a singular program specific focus—holds the key to the next generation of adolescent pregnancy prevention efforts. By combining and making available a diverse set of coordinated strategies within the community, different segments of the adolescent population—each with its own set of needs—should be reached, with a greater likelihood of changing specific social norms and practices. Furthermore, this synergistic approach emphasizes focusing on the *assets* of youth, in direct contrast to more traditional program concepts that have often stressed reducing or "repairing" their deficits.[12] Rather than define teenagers as a risk-taking "problem group," program staff attempt to identify and nurture the strengths of their adolescent clients in an effort to reinforce an individual sense of responsibility for their own actions. In addition, there is increasing recognition of the valuable role young people who are adequately nurtured and trained can have in shaping the development (and even staffing) of new programs and strategies.[8] These and other more comprehensive approaches to adolescent

pregnancy prevention are being examined through the application of rigorous evaluation studies. Figure 1 delineates comprehensive adolescent pregnancy prevention components and strategies.

As reflected in this monograph, several different generations of program efforts sometimes co-exist within the same community, although formal linkages between different types of pregnancy prevention programs traditionally do not. This fragmented approach (which often reflects adult ambivalence regarding adolescent sexuality and contraceptive use) contributes to the "mixed messages" young people receive in our society today. Unfortunately, most adolescents do not receive clear and consistent messages from their families, schools, community-based organizations, and policy makers about their value to the community, and of the importance of delaying the onset of sexual activity, or about being contraceptively responsible, if they are already engaged in a sexual relationship.

Figure 1. Comprehensive Adolescent Pregnancy Prevention Components and Strategies



II. Bringing Theory Into Action*:* Theoretical Frameworks and Program Models

In this section, we present the theoretical frameworks we found to be most clearly relevant for teenage pregnancy prevention programs. These theoretical models were extracted from various sources studied in the course of a wide-ranging review of the professional literature, including a recent textbook edited by DiClemente, Crosby and Kegler.[1,14,15,16,17,18]

Although various theoretical frameworks have been available for a number of years and used in psychological and sociological studies to gain greater understanding and insight into human behavior, their practical application to developing more effective interventions, such as programs focused on adolescent pregnancy prevention, has rarely been fully explored**.** When these frameworks have been applied, it has often been with the goal of influencing behaviors by working at the *individual* level (e.g., adolescent self-esteem, knowledge of and motivation to delay sexual activity or to use contraceptives). Furthermore, relatively little effort has been to direct program strategies at the antecedent factors that shape individual behavior. For example, academic failure has been well documented as a risk factor for early childbearing, yet few programs focus on linking their efforts with school tutoring or academic remediation efforts.

Today, many planners and providers are recognizing the need to expand the focus of their efforts not only at the individual client level, but also at the broader familial, community, and social context in which adolescents live. This expansion is based on understanding the non-sexual antecedents that influence adolescent sexual, contraceptive, and pregnancy behavior (e.g., family structure, adult support, parental attachments, etc.) as well as community and social context (e.g., availability of contraceptive services for teenagers, policies pertaining to the type of sex education offered in schools, etc.).
Interventions aimed at the *familial/community level*, reflective of the young person's social and environmental context, are conceptualized as providing cultural models and norms that support and sustain protective behaviors, thereby promoting individual behaviors that reduce pregnancy risks. Finally, we recognize the importance of working to ameliorate teenage pregnancy at the *structural level*. Ameliorating poverty, gender inequalities, employment opportunities, and assuring greater access to educational and health resources will promote the social equality necessary to reduce the incidence of teenage pregnancy.

In fact, many theorists and program providers recognize that it is the interactions among individuals, families, communities, and social structures that shape human behaviors and that is where interventions

need to be targeted in order to have a major effect. Yet, far too few efforts have been made in the past to consciously plan and implement programs that incorporate what is known about human behaviors and social structures and how best to influence those behaviors and structures at individual, social and environmental levels.

As Kirby[1,2] has argued, it is accepted that:

1) Individual characteristics of teens themselves affect their chances of becoming pregnant as teenagers, but so do the characteristics of their partners, peers, families, schools, communities, and states.
2) Since so many factors affect teen pregnancy, a program that addresses only one factor is unlikely to have a dramatic impact on teenagers. To make a significant impact, one or more programs may need to concurrently address multiple risk and protective factors at the same time.
3) Some of the most important risk and protective factors related to adolescent pregnancy involve sexual beliefs, attitudes, and skills, but many others do not even involve sexuality (e.g., plans for the future, life opportunities, level of family income).

Thus, it is generally agreed that to maximize positive behaviors and reduce risk behaviors, program impact must occur not only at the individual/behavioral level, but also at the familial/community and broader social structural level as well. Prevention programs must be championed by additional stakeholders and at levels that go beyond individual behavioral interventions to other areas that influence young peoples' lives.

Too many programs that are designed to produce individual behavioral change have forfeited important opportunities to maximize the success of their outcomes. Many programs, of course, serve as examples of theory-action integration. What they share is an explicit theoretical understanding of the assumptions they make about "the causal chain linking interventions, risk and protective behaviors, and sexual risk taking."[1,16] Important examples include various youth development programs that have integrated developmentally appropriate family life education, for example, the Girl's Inc.[6] or the Junior League that originally established the Teen Outreach Program, a service-learning community program that integrates family life education in its curricula,[5] the Children's Aid Society/Carrera Program in New York City,[11] and the California Adolescent Sibling Pregnancy Prevention Program.[12]

Although it is not realistic to expect that basing programs on theoretical frameworks will ensure total or automatic success, program models that rest on a firm theoretical footing have a better chance to succeed.

The sheer complexity of influencing complex human behavior requires that we try to design, fund, implement, and evaluate the strongest possible programs built on sound theoretical frameworks.

This monograph concentrates on two primary areas:

1) A description of the theoretical frameworks that appear to be most relevant to adolescent pregnancy prevention, and
2) The application of these theoretical constructs to the development of comprehensive prevention programs.

Finally, the overall intent of this analysis is to aid the process of raising the quality, and thus the effectiveness, of both new and existing programs through the application of relevant theoretical frameworks.

Theories and Models: Does One Size Fit All?

No one theory can provide the "best" solution for designing, delivering, and/or evaluating effective adolescent pregnancy prevention programs. Programs often and appropriately rely on several theoretical assumptions when designing and providing services; however, relatively few adolescent pregnancy prevention efforts have incorporated important theoretical frameworks in an explicit and prescribed manner. Some intervention components implicit in the theoretical frameworks that we will discuss have been applied more than others and some theories have received greater testing than others. On the whole, the application of theoretical frameworks to the complexities of adolescent pregnancy prevention remains largely undocumented and untested. Exceptions can be found in such programs as *Reducing the Risk,*[20] *Safer Sex,* [22] C*ognitive-Behavioral Interventions,*[23] and *Teen Talk,*[24] where the use of theoretical frameworks to support skills-oriented program strategies has been found to be more effective than programs that merely impart information to their adolescent clients.[24] Other programs that effectively integrate theory and program design can be found in HIV education and teenage pregnancy prevention efforts such as Plain Talk, [25] Project Action, [26] and Project RESPECT [27] among others.

That there are theories that have yet to be tested simply underscores a primary message of this document: while pregnancy prevention initiatives often do employ theoretical frameworks in their program models, they do so with a variety of levels of continuity of understanding by managers and direct service providers on just how the intervention supports their theoretical assumptions. In addition, once programs are delivered, program planners and service providers rarely reassess the theoretical ideas and assumptions upon which their program rests. More than ever, we must make our efforts count, and turn

our energies to developing more effective and targeted interventions, enhance our theoretical understanding of teenage pregnancy prevention, and test these approaches to learn *what works and why*.

How Do Theoretical Frameworks Help Program Planners and Providers?

When delivering an intervention, assumptions are made about the social problem at hand. These assumptions represent one's theoretical position on the causes and consequences of the social problem. In academia, a theory is a set of interrelated concepts, definitions, and propositions that presents a *systematic* view of events or situations by specifying relations among variables, in order to *explain* and *predict* the events or situations.[28] Academics aside, all programs hold assumptions about the problem and design their interventions accordingly. These assumptions usually include causal understandings of the health outcome of interest; in this case outcomes include sexual behaviors and/or pregnancy and HIV/STD prevention. What is often lacking, however, are articulations of those assumptions, the antecedents addressed, and continuous re-evaluations of those assumptions in light of the degree to which a designed program is effective in reaching its goals.

As described earlier, three "ideal-types" of theoretical frameworks exist: individual level, familial/community level, and structural level. In general, theoretical perspectives divide rather clearly between those concerned with large-scale characteristics of social structure and social position (i.e. macro perspectives related, for example, to the impact of poverty and class on the incidence of adolescent childbearing) and those concerned with person-to-person encounters and the details and meanings of human interaction and communication (i.e. micro perspectives related, for example, to the type of parent-child communication that exists regarding sexual behavior, the impact of a sibling who is a teenage parent). This does not mean however, that synergy and interaction among these theoretical levels of analysis does not occur. In fact, many theoretical perspectives are concerned with the interactions among social structures, social positions (race, class, and gender), and social interactions.

What is important is to recognize that all theories hold certain assumptions about human nature, human behavior (or action), and the degree to which institutions and cultural norms constrain and enable human action. Furthermore, each theoretical perspective more appropriately addresses specific antecedents. For example, for the antecedents at the structural or the social environment level—such as community poverty level, social institutions, neighborhood resources, and social capital (e.g., level of mutual trust and sharing of resources)—a structural level theoretical framework with its associated interventions will better match one's goals than an individual level approach. [1] Theoretical perspectives that aim at

predicting both human behaviors and social life are most able to identify intervention points where human behaviors are susceptible to influence and change.

Table 1: Theoretical Models and their Primary Focus: Individual, Familial/Community and Structural Level

Individual	Familial/Community	Structural
Developmental Assets/Resiliency Theory (1)	Health Belief Model (3)	Social Ecology Model (12)
Transtheoretical Model (2)	Social Learning Theory (5)	Theory of Gender and Power (13)
Theory of Reasoned Action/ Theory of Planned Behavior (4)		
Attribution Theory (6)		
Protective Motivation Theory (7)		
Self Regulation Theory (8)		
Relapse Prevention Theory (9)		
PRECEDE Framework (10)		
Psychosocial Model (11)		

Which specific theoretical level of intervention or combination of levels of intervention to use will largely depend upon a great number of different factors. These factors include:

- The target antecedents (e.g., social/structural environment, familial/community social network, or individual adolescent knowledge, beliefs, and behaviors).
- The target population the program is intended to serve (e.g., males, females, pregnant teens, parenting teens, sexually active and not yet sexually active teens, parents with children and adolescents, specific age groups, specific racial or ethnic groups, etc.).
- The desired program outcomes (e.g., enhancing the life skills of young people, postponing the initiation of sexual activity, decreasing the number of sexual partners, improving the consistent and correct use of birth control methods, improving the economic environment of young people in a community).
- The types of resources and interventions that are actually feasible for and available to the target population (e.g., youth-serving organizations willing to link their activities to a pregnancy prevention agenda, staff who are trained in the program curriculum and who are enthusiastic about working with adolescents, availability of a comprehensive family life education curriculum,

counseling in a teen-friendly family planning clinic, business sector concerns and investment in young people as an alternative to early childbearing).

- The community and cultural context that determines which strategies will be accepted by the target population (e.g., Do community norms encourage the use of a variety of strategies to delay early childbearing, including the role of parents as the primary source of sexuality education, mentoring, and job skills development for their children? Will the community comfortably accept explicit discussion of condom use in school settings?).
- Community capacity (e.g., Do the families, teenagers, and other community members appear to have the capacity to mobilize for action? For example, do they have the capacity to improve neighborhood conditions and advocate for safe neighborhoods or to work for current and future education and employment opportunities for young people?).
- The economic conditions in the community (e.g., level of poverty and unemployment, economic opportunities, types of economic resources available).
- The availability of the media resources needed to communicate to and within the community (e.g., television, community cable access, radio, internet, billboards, and local community and school newspapers).

III. Theory into Practice

The theoretical frameworks presented on the following pages were selected for review according to the following criteria.

- Their potential utility in explaining complex behavior;
- Their potential for immediate and relative ease in applicability;
- Their acceptance by a broad range of experts in multiple disciplines; and
- Their inclusion in a thorough review of the literature in terms of their actual application to other major public health or related problems.[18,28]

The theoretical frameworks selected for extensive discussion are:

1) Developmental Assets/Resiliency Theory
2) Transtheoretical Model
3) Health Belief Model
4) Theory of Reasoned Action/Theory of Planned Behavior
5) Social Learning Theory
6) Attribution Theory
7) Protective Motivation Theory

8) Self Regulation Theory
9) Relapse Prevention Theory
10) PRECEDE Framework
11) Psychosocial Model
12) Social Ecology Model
13) Theory of Gender and Power

While other frameworks, such as Consumer Information Processing, and Diffusion of Innovations Theory, were also examined, their applicability to adolescent pregnancy prevention did not meet our selection criteria. We discuss 13 potentially applicable theoretical frameworks at length. Some, such as the Developmental Assets/Resiliency Theory model and the Transtheoretical model, focus more on the interpersonal level and behavioral levels, while others are geared more to the social structural level. It is our goal that program evaluators, planners, and providers will begin to recognize the synergy among these levels of programmatic effort.

Our intention is that this analysis can serve to encourage evaluators, planners, and providers to explore which theoretical framework (or combination of frameworks) best fit the populations they serve, as well as their own program assumptions and goals. While there are information gaps in the research field regarding the applicability of each theory to community-wide adolescent pregnancy prevention strategies, their potential utility for improving the types of programs that need to be developed is not in serious doubt. We urge the reader to examine all 13 frameworks to ascertain how appropriate each might be (keeping in mind that components from different frameworks can often be extracted for combined use) for different groups of adolescents (e.g., males vs. females, urban vs. rural, younger vs. older, different racial or ethnic groups, etc.), and to consider how these frameworks help to shape the types of strategies pursued.

In the field of adolescent pregnancy prevention, the lack of a theoretical base has resulted in part from information gaps that arise when researchers do not have the opportunity to help programs understand the potential application of theory-based findings both to existing interventions and to the creation of new ones. In addition, program developers and providers often lack the training, the time, or the incentive to alter existing program practice by incorporating theoretically-based research and findings that are relevant to their programs. This information gap frequently results in a mismatch between research findings and the types of programs that are currently available to adolescents and their families through community settings. The failure to apply theoretical frameworks to programs for adolescents may also stem from

stereotyping teenage behavior as irrational and impulsive, and thus not suitable to the application of rational theoretical models. Adler *et al.* have demonstrated that adolescents do in fact make rational decisions and are an appropriate target population to which theoretical frameworks can be applied.[29] Table 2 lists each theoretical framework, its level of intervention and focus, and key concepts.

Table 2: Summary of Theories: Focus and Key Concepts

Level	Theory	Focus	Major Concepts
Familial/ Community /Individual	Health Belief Model	Readiness for action stems from an individual's estimate of the threat of illness and the likelihood of being able, through personal action, to reduce that threat.	• Perceived susceptibility • Perceived seriousness • Perceived benefits • Perceived barriers • Cues to action • Self efficacy
Individual	Attribution Theory	Describes the behavioral processes of explaining events and the behavioral and emotional consequences of those explanations.	• Seek to understand causes of: o Internal factors o External factors o Circumstances o What to do to avoid problem in the future
Individual	Protective Motivation Theory	Actions are based both on threat appraisal and coping appraisal.	• Motivation a function of: o Severity of consequences o Probability of consequences o Effectiveness of recommended action o Internal rewards o External rewards
Individual	Trans-theoretical Model	Modification of behavior involves movement through stages of change.	• Precontemplation • Contemplation • Preparation • Action • Maintenance
Individual	Relapse Prevention Theory	Modification of habitual patterns of behavior through the use of self-management and self-control techniques.	• Initiation • Modification • Cessation • Maintenance of cessation • Relapse
Individual	Gender & Power Theory	Economic and educational opportunities. Social and institutional gender norms.	• Reduction of inequalities by gender, race, or class • Addresses division of labor, division of power, and division of cathexis (i.e. social norms and affective attachments)

Level	Theory	Focus	Major Concepts
Individual	Theory of Reasoned Action/ Theory of Planned Behavior	Behavior predicted by individual's intention to perform the behavior. The dimension of perceived control was later added and called the Theory of Planned Behavior.	• Own evaluation of consequences • Own attitude and beliefs about protective action • Others attitudes and beliefs about protective action • Normative beliefs and expectations of others: o People I love o People I value o Providers o People who set policies and laws • Motivation to comply • Perceived control
Familial/ Community	Social Learning Theory	Behavior a result of "reciprocal determinism," the continuing interaction between a person, the behavior of that person, and the environment within which the behavior is performed.	• Reciprocal determinism • Skills, including goal-directedness, emotional coping, and problem solving • Expectations • Intent • Motivation • Self-efficacy • Observational learning • Norms • Reinforcement (intrinsic and extrinsic) • Social support • Structured opportunities for change
Individual	Self Regulation Theory	Individual's operate like feedback systems, constantly regulating their relationships to the environment in order to bring their current states closer to their goal states.	• Feedback system of self regulation • Coping procedures • Problem solving
Individual	Develop-mental Assets/ Resiliency Theory	To enable youth to participate in socially useful tasks so that they become healthy adults in spite of adversity, and demonstrate positive results in self-esteem and moral development.	• Support (Family, friends, school and community) • Empowerment • Motivation • Boundaries • Expectations • Provision of opportunities • Educational commitment • Positive values • Social competencies • Positive identity • Positive school climate • Activities (extra-curricular, religious, and community)
Individual	PRECEDE Framework	Systematic planning process which empowers individuals with knowledge, motivation, capacity and involvement in community affairs so that they can change their behaviors, policies, and regulations which influence their behaviors resulting in an improved quality of life.	• Predisposing factors (provide motivation or reason behind a behavior) • Reinforcing factors (provide continuing rewards or incentives for a behavior) • Enabling factors (make it possible for a motivation to be realized)

Level	Theory	Focus	Major Concepts
Individual	Psycho-social Model	Individuals strive to combat disequilibrium between themselves and their environment.	• Goodness of fit • Reduction of problems and stress • Shaping of environment • Modification of individual constructs • Enhancement of self-esteem and perception • Past has effect on present • Significant others' opinions and values
Structural	Social Ecology Theory	Individual is embedded in and influenced by numerous systems or groups.	• Multiple domain health intervention integration (home, school, community, and political settings) • Cultural change (transformation of norms, values, and policies) • Individual's perception of support or neglect • Opportunities for safer behaviors

Selecting the level which program developers want to target will help them choose the theoretical framework(s) best suited to their program.

Selecting the Level of Program Intervention

On the individual level, many pregnancy prevention programs employ interventions aimed at changing cognitive, behavioral, and psychosocial characteristics that are shown to directly impact sexual antecedents, such as the number of sexual partners, onset of sexual activity, and the level of contraceptive use. These interventions are often curricular-based, such as HIV/AIDS and sex education (including abstinence-only programs), and aim to improve teenagers' knowledge, attitudes, and beliefs about sexuality and teen pregnancy. These programs may also include other components, such as sex and HIV education targeting parents and families and reproductive health programs designed to improve access to condoms and contraceptives.

Interpersonal Level Interventions

The interpersonal level includes familial, peer, and other social relationships. At this level it is understood that such factors as relationships with family members, teachers, peers and significant others influence peoples' feelings and actions. Programs at this level of analysis often include peer support and connections with mentors and other adults.

Social Structural Level Interventions

The social structural level emphasizes social and community factors, such as access to and distribution of financial and cultural resources, including family income, education, employment opportunities, and extra-curricular activities. Programs at this level of analysis often include cultural norms, access to care, and inequalities in educational and other community resources.

Evolution of Teen Pregnancy Prevention Program Interventions

Recognizing the limitations of the past, pregnancy prevention programs are shifting from a singular focus on knowledge, attitudes, and belief-based interventions and/or interventions focused on access, to services that emphasize multifactorial, multilevel approaches to teen pregnancy. As the field acknowledges a clustering of risk factors, programs are being developed accordingly—addressing the antecedents to teen pregnancy (e.g., academic failure) as well as preparing young people with the tools to navigate their adolescent years pregnancy-free. Despite this shift, many programs continue to emphasize individual-level attributes and, thus, are directed at impacting sexual behavioral antecedents exclusively and do not pay attention to non-sexual antecedents, such as cultural norms and need for service learning, vocational education and employment opportunities, and adult connections. That is, few programs aim to shape interventions based on what we know from theoretical research about the complexity of changing health risk behaviors and increasing protective behaviors. We contend that if programs are able to gain clarity on theoretical options, types of antecedents, and intervention choices, more effective interventions are possible. In fact, many of the theoretical frameworks presented in Table 2 include both personal (or internal) and environmental (or external) factors, and the interaction between the two (Table 3 illustrates this well).

Table 3: Personal and Environmental Domains Incorporated in Theoretical Behavioral Frameworks

Theory is made up of personal and environmental factors, and the interaction between the two:
Personal Factors (Internal): • Knowledge • Attitudes, beliefs and values • Skills • Intent and motivation
Environmental Factors (External): • Social support • Social norms • Availability of programs and services • Opportunities for youth development

Although a given program may be successful with one target population, the same intervention may not necessarily be successful with the same general target group in other communities, or in communities or settings with different target populations.[28] To implement effective interventions, the intervention must target the appropriate outcome variables that are specific to the needs and assets of the target population and to the individuals within that population. It is also important to recognize whether the intervention is directed towards internal or external factors, or both. For example, if many adolescents in a community

are sexually active at an early age and have poor education and social outcomes, and the desired program outcomes are to: 1) increase the number of adolescents who remain abstinent, 2) increase the number of sexually active teens who use effective contraceptive methods and 3) increase school graduation rates, then the program's planners must consider: 1) when and how often to intervene (at what age or grade in school), 2) the type of curriculum and/or other intervention(s) needed and the requisite level of reinforcement, and 3) the level at which the intervention(s) (personal, inter-personal, and/or environmental) is directed.

The target population's level of knowledge about such matters as sexuality and reproductive health, as well as career development, is an important underlying aspect of most theoretical frameworks, since that level of knowledge is a crucial element in shaping individual behavior and decision-making. Furthermore, the community needs/assets assessment that must precede intelligent program design and implementation should seek to assess what adolescents of different ages and their parents actually know (or think they know) before interventions are developed and tested to meet their needs. An obvious example of this process is to determine the level of knowledge adolescents in the community possess about pregnancy and pregnancy prevention, sexually transmitted diseases, and contraceptives, as well as their awareness concerning the importance of completing high school and the pursuit of higher education to fulfill career goals.

Although not all the theoretical frameworks discussed in this monograph have thus far been incorporated into tested or evaluated pregnancy prevention programs, they do provide insights into the kinds of potential strategies and the level to which they could be targeted (i.e. personal and/or environmental) that could be included in various programs and approaches. A close examination of these theories promises ample validity and utility for planners and providers who wish to benefit from their application in designing new interventions or re-conceptualizing existing programs. Related topics to assess in adolescents also include:

1) Their perceptions concerning their future employment opportunities,
2) Their feelings about early childbearing,
3) Their perceptions of the accessibility and acceptability of existing family planning and other social service and community-based organization resources in their community,
4) Their behavioral intent to abstain and/or use birth control protection in their future, and
5) Their intent to seek viable alternatives to early childbearing within a youth-friendly community context.

Description of Theories

A detailed description of each theory, along with a schematic framework and its potential application to adolescent pregnancy prevention efforts, follows. It is important to remember that these theoretical frameworks are not unchangeable, and are in fact continually evolving as ongoing research applies these theories to different research questions. As research continues, elements that might have been omitted from a given theory's initial conceptualization might emerge as that theory is applied to different target groups. To cite a simple example, a given theoretical framework, or elements of that framework, may prove more applicable to younger adolescents than to older ones. For this reason, theoretical frameworks should be reviewed and updated regularly to ensure their applicability to the program that is being developed, implemented, and tested, and to the population or group for which the program is intended.

1. Developmental Assets/Resiliency Theory

The Developmental Assets/Resiliency Theory represents a shift away from viewing youth as "problems" (the problem, or deficit, paradigm) that somehow must be "fixed" or "repaired." Instead, this theoretical framework looks at youth in terms of the positive assets and resources that either reside within young people themselves, or that can be enlisted in support of youth in the broader community as positive change agents (resiliency/prevention paradigm). The problem paradigm focuses on individual weaknesses and limitations, and overlooks the value in—and thus restricts the opportunities for—encouraging young people to participate more fully in their community. The developmental assets paradigm, on the other hand, incorporates youth service as a key element in prevention planning. The theory represents a compelling argument that teenagers who participate in socially useful tasks (paid and volunteer) become healthy adults and show positive results in self-esteem and moral development, even among those raised in adverse environments.[30] This links with pregnancy prevention in that it encourages young people to focus on positive assets, such as education, and therefore to protect themselves from pregnancy risks.

Developmental Assets/Resiliency Theory can be divided into two primary dimensions: external assets and internal assets. External assets are the factors that surround adolescents with the support, empowerment, boundaries, expectations, and opportunities that guide them to make sensible choices and behave in healthy ways.[8] These assets can be provided by various people and social institutions, including families, friends, neighbors, schools, and faith and community organizations. Positive support, communication, monitoring, mentoring, discipline and involvement represent a sample of the kinds of assets that various people and institutions can offer to young people.

Internal assets are defined as values, skills, and self-perception. They are assets that must be taught, encouraged, and nurtured so that teenagers can learn to guide their behaviors and choices in positive, self-nurturing ways.[30] They include a commitment to learning, positive personal and social values, social competence, and a positive social identity. Some specific examples of internal assets include a motivation to achieve, educational aspirations, caring about themselves and others, honesty, a sense of responsibility, self-restraint, a desire for non-violent conflict resolution, respect for and familiarity with other cultures, and a sense of purpose. All these assets represent qualities that are desirable if teenagers are to be convinced that avoiding too-early childbearing is in both their short- and long-term self-interest. Youth service—the active participation of young people in community service—draws upon both external and internal assets, and is an important component of Developmental Assets/Resiliency Theory. The literature emphasizes five reasons for incorporating youth service into prevention programs.[31] Youth service:

1) Promotes healthy psychological, intellectual, and social development;
2) Helps teenagers learn how to assume adult responsibilities;
3) Draws upon the energy and creativity of youth to address present and future problems;
4) Builds linkages between school and community, thus enhancing the relevance of education to life, and experience to education; and
5) Helps fill the large unmet need experienced by most communities in voluntary and other community service positions that often go unfilled for lack of volunteers.[31]

This model stresses that families, businesses, peers, education and health institutions, community-based organizations, and the faith community must work together to foster the positive personal and social development of young people. Also important is the availability of community services, activities, support programs, and opportunities for youth development which foster a greater sense of "connectedness" between adolescents and adults in the community. The pregnancy prevention community models that employ a variety of concurrent strategies (e.g., the Children's Home Society/Carrera Model) draw upon various community resources to develop and reinforce the inherent assets of teenagers. This "social inoculation" approach attempts to prevent vulnerability to an unintended pregnancy.[32,33] By marshaling the resources of teenagers and their families, as well as the faith, school, and business sectors of the community, more adolescents can be supported in their efforts to act in a personally responsible manner. The goal is to help young people become capable of being responsible not only to themselves, but to a community that demonstrates it cares about their welfare as well. This theory, then, exists in between the behavioral/individual level and interpersonal levels of analysis.

2. Transtheoretical Model

The Transtheoretical Model was developed to understand the underlying structure of behavior change. Thus, this theory is firmly situated in a behavioral level theoretical framework. The Stages-of-Behavior-Change Model was previously noted as a separate model, borrowing from the Transtheoretical Model. Due to their almost identical nature, only the Transtheoretical Model has been included in this review.[34,35,36,37]

A core concept of the Transtheoretical Model is that modification of behavior involves movement through stages of change. This model applies to individuals who seek professional help and to those who choose self-change. Both groups have been found to go through varied processes, depending upon the stage of change they were initially in, and the stage they are in when seeking assistance. An individual can enter or exit the stage of readiness to change at any point through any of the stages. Although originally conceptualized in linear terms, with the individual progressing sequentially from one stage to the next (Figure 2), the course of change that is more characteristic for many clinical problems tends to follow a circular pattern (Figure 3). The stages represent distinct but related periods of time, marked by different actions in each stage.

These stages consist of pre-contemplation, contemplation, preparation, action, and maintenance. In the pre-contemplation stage, individuals are either unaware of having problems, or they are not thinking seriously about changing a behavior that results in a problem. Although the individual may not acknowledge the problem consciously, persons in his/her environment are often aware that there is a problem. As applied to a pregnancy prevention intervention, this stage may describe an adolescent who is sexually active, but who ignores, or is not aware of the risk, of an unplanned pregnancy or a sexually transmitted disease. It may also describe the teenager who is abstinent, but who may not be conscious of the stages of thinking that will help him or her to maintain their resolution to remain abstinent**.**

Contemplation is the stage where individuals become aware that a problem exists. At this stage, there is serious thinking about the situation, but not yet a true commitment to change. During this stage, individuals often weigh the pros and cons, as well as the solutions to the problem, struggling with their evaluations of the problem behavior, and the amount of energy, effort and loss it will cost to overcome the problem. At this stage, adolescents realize the risk of pregnancy, and, if abstinent, seriously consider how they might successfully communicate to their partners their desire to remain abstinent. At the same stage, the sexually active teen may be considering adopting a method of birth control. However, both groups may avoid further action out of fear that the effort would be too complex or difficult. Maintaining

continued abstinence in the face of peer pressure to initiate sexual activity, or negotiating condom use with a partner, may seem nearly impossible to many adolescents.

The third stage consists of preparation, when the individual begins to make a plan for change. He or she may have unsuccessfully attempted some action during the past year and intends to take action in the next month or the very near future. Although some movement to deal with the problem may have occurred, truly effective action has not yet been taken. At this stage, adolescents may have experimented with a birth control method or a plan to use birth control in the very near future. They may use contraception inconsistently at this stage, and may only proceed to the next stage if they or a friend have been faced with a pregnancy scare. For the adolescent who wants to remain abstinent, or for the teen who may already be sexually active with the intention of becoming abstinent, he or she may be in the process of considering which steps might be necessary to achieve these goals.

The next stage is the action stage, when people change their overt behavior to overcome their problems. This requires an alteration of problem behavior, and the implementation of new behavior. Self-esteem tends to be high in the action stage, when individuals feel capable and confident of acting on their beliefs. Others, too, may notice the change, and provide recognition or support for the person who has reached this stage. To continue our examples of the teenager who chooses to abstain, or the teen who is sexually active, he or she at this stage has consistently abstained or has been consistently practicing safe sex, for up to six months. Both feel good about their decisions and their ability to fully put into practice their desired, more responsible behavior.

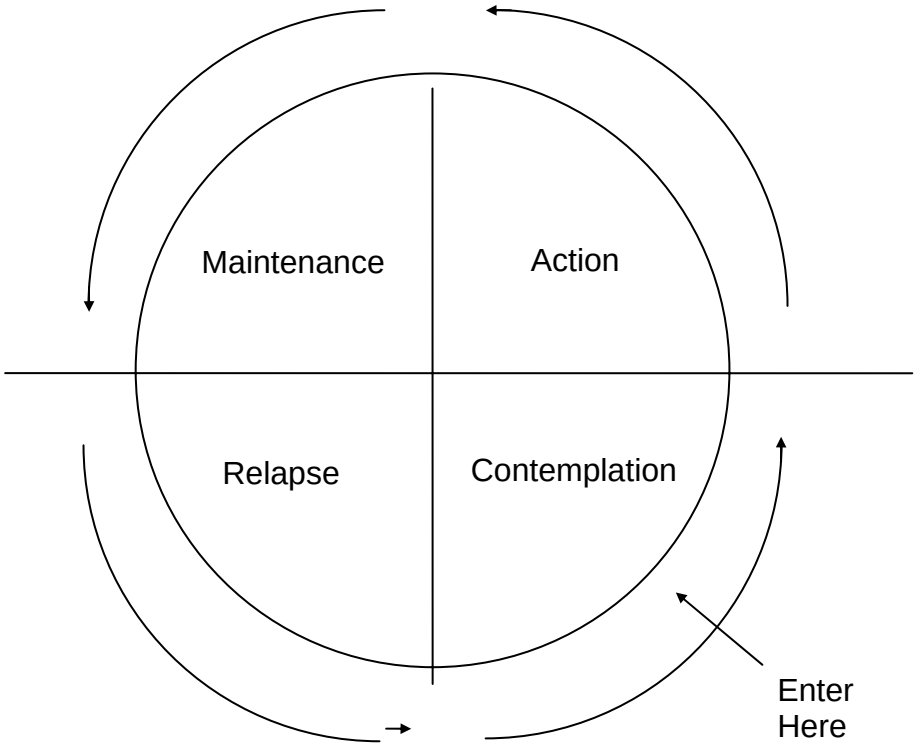
The final stage, maintenance, is where the individual works to continue the gains achieved during the action stage, and to prevent relapse. Maintenance can be viewed as a continuation of the relatively newly adopted behavior change. In the maintenance stage, individuals must remain free of their problem behavior for more than six months, and can remain in this stage for the rest of their lives. The chief hallmarks of maintenance are stabilizing behavior and avoiding relapse. At this stage, our adolescent examples have been consistently abstinent or practicing safe sex. To remain in this stage and avoid relapse, he or she will continue to do so, both in current relationships or in new ones as they emerge[36,37] Figures 2 and 3 show the frameworks from a linear and a circular approach. While a teenager may proceed from one stage to another, life circumstances, such as a new relationship or a stressful situation, may accelerate or delay progress from one stage to another.

Figure 2: The Stages of Change Linear Model

Precontemplative→ Contemplative → Preparation → Action → Maintenance

(Source: Prochaska, J., & DiClemente, C., 1984)

Figure 3: The Circular Model of the Transtheoretical Approach



(Source: Prochaska, J., & DiClemente, C., 1984)

The Transtheoretical Model requires different interventions for different stages. Individuals who do not meet the criteria for effective action in a given stage may remain in their current stage for a short time, or relapse to a previous stage. The amount of time spent in each stage varies with the individual, although the tasks required in each stage are assumed to be unvarying. By ascertaining an individual's current stage, and hence his or her readiness for change, the appropriate intervention can be implemented accordingly.

The Transtheoretical Model focuses primarily on the individual, and does not explicitly address environmental factors. So, while it is informative and helpful that the health educator or counselor know which stage the adolescent is in to target an intervention, they must also discern what kind of action the

adolescent may be ready to take. If, for example, the adolescent is at high risk for becoming pregnant and is still in the pre-contemplative stage, she is either unaware of or in denial of any potential problem; she is not explicitly considering any change in behavior. The counselor must then begin to educate the adolescent about the likely risk of pregnancy, and counter her belief that she is somehow immune to becoming pregnant. Until she realizes and accepts her own vulnerability, she will most likely not practice effective contraceptive use. The adolescent who desires to remain abstinent may need to develop a repertoire of skills to successfully communicate with his/her partner in order to maintain their choice.

The most important factors to accentuate in the application of the Transtheoretical Model are the assessment of which stage the individual is in, his/her readiness to change (or attempt to change), and the specific strategies the provider can use to help guide the adolescent through the stages. Asking questions about perceptions of risk, previous experience with contraceptive use if appropriate, and barriers to implementing new behaviors are helpful to incorporate into the process. The educator or counselor may also explore at what stage the adolescent is in relation to creating a sense of direction for their own future. Reexamining an adolescent's past decision to become sexually active or not, as well as discussing the option of a return to abstinence, could also be valuable. **(See Case Study 1).**

Case Study 1: Applying the Transtheoretical Model to the Adoption and Use of Condoms By a Male Teenager.

Tom is a sexually active 16-year-old who has never used condoms or considered using them. At the start of his junior year, he participates in a 10-week sexuality education program that emphasizes the use of condoms to prevent pregnancy and STIs. Two weeks after completing the program he purchases a package of condoms. The next weekend he goes to a party, thinks briefly of the condoms he forgot at home, and proceeds to have unprotected sex in his car. Was the sexuality education program unsuccessful? Our first reaction may be that it was not successful—after all, Tom continued to engage in unprotected sex. However, he did purchase the condoms—presumably with the intent of using them—a measure he had not even considered prior to the program. While this outcome might frustrate us as sexuality educators, proponents of the Transtheoretical Model of behavioral change would say that helping Tom move one step closer to practicing safer sex should be defined as a success.

Although teenagers are likely to progress through these stages in a linear fashion, this framework (see Figure 3) allows for the possibility of skipping stages, as well as moving back and forth between them. For example, an adolescent may move from Pre-contemplation directly to Action (this would have reflected Tom's progression from one stage to the next had he actually used the condoms). Or, there may be movement from Ready for Action/Preparation back to Pre-contemplation. For example, if Tom's parents found the condoms and didn't allow him to go to the party, fear of discovery might carry more concrete, immediate risk for Tom than the more abstract risks of unprotected sex. Proponents of the Transtheoretical Model believe that the regression exhibited by Tom should not be viewed as a failure, since people often learn from their mistakes. Forward progress for Tom may well be easier the next time around, depending upon his willingness to accept greater responsibility in his relationship and a more candid dialogue with his parents.

Beyond matching interventions to the adolescent's stage of readiness, the Transtheoretical Model suggests

that we should target the individual's perceptions of the pros and cons of the behavior in question. The ratio of the perceived pros to perceived cons is referred to as the individual's *Decisional Balance*. Adolescents in earlier stages are likely to perceive more cons related to a behavior such as condom use, while those in advanced stages, such as Action, are more likely to perceive more pros. The theory further suggests that moving an adolescent from Pre-contemplation to Contemplation is best accomplished by attempting to increase perceived pros, while a move from Contemplation to Action or Maintenance is more likely to result from efforts to reduce perceived cons.

Health educators and other service providers recognize that normally they have only brief contact with program participants who are also subject to other strong influences, such as their peers and the media. Moreover, most educators have little if any opportunity to assess long-term change. Instead, assessing Stages of Change may be one way that they can demonstrate the positive effects of programs, even when drastic changes in behavior are not apparent or long-term follow-up is not possible.

A basic tenet of this model is that interventions should be "stage matched". The adolescent's stage of readiness for change must be determined, since targeting the wrong stage would have little or no impact. For example, demonstrating proper use of condoms may be useful for moving a teenager from Contemplation to Action. However, the same strategy is not likely to influence the individual who is in the Precontemplation stage, and who is not even considering the use of condoms. Instead, this individual might benefit from a discussion of the protection condoms can provide.

What is particularly challenging for a classroom health educator is that in all likelihood, they will be working with adolescents at different stages of both change and development. However, these differences in development and readiness for change can actually be used as an effective teaching approach in classroom or group settings. If they are exposed to differences among their peers, those adolescents who are less mature and/or less ready to accept change are likely to become more aware of alternative options or different ways of thinking.

The provider should also be aware that the individual teenager may require very specific behavioral strategies to progress from stage to stage. While educational interventions *per se* are not behavioral alone, consciousness-raising, might mean providing information about the behavior in question. Another, self-efficacy strategy, might be employed to help an adolescent develop sufficient confidence to actually perform the behavior. Finally, the Transtheoretical Model defines "temptation" as the intensity of the urge to perform or not to perform a given behavior. Thus, Tom's *opportunity* to have sex may be the stronger motivator even though his intentions are to use condoms when he has sex. Together, all these components of the model provide directions for improving services for adolescents, as well as for adults.[32]

Table 4: Transtheoretical Model of Behavior Change and its Application to Condom Use

Stage	General Definition	Condom Use
Pre-contemplative	Not currently performing behavior and does not intend to do so; may be unaware of risk or benefit of behavior.	Not currently using condoms; does not intend to do so in the future.
Contemplation	Not currently performing behavior, but intends to do so eventually.	Not currently using condoms; intends to do so in the future, within six months.
Ready for Action/Preparation	Not currently performing behavior, but intends to do so immediately	Not currently using condoms; intends to do so in immediate future, within one month.
Action	Currently performing behavior for a short period of time and intends to continue doing so.	Currently using condoms, for a period of time less than six months; intends to continue doing so in the future.
Maintenance	Currently performing behavior for a long period of time and intends to continue doing so.	Currently using condoms for a period longer than six months; intends to continue doing so in future.

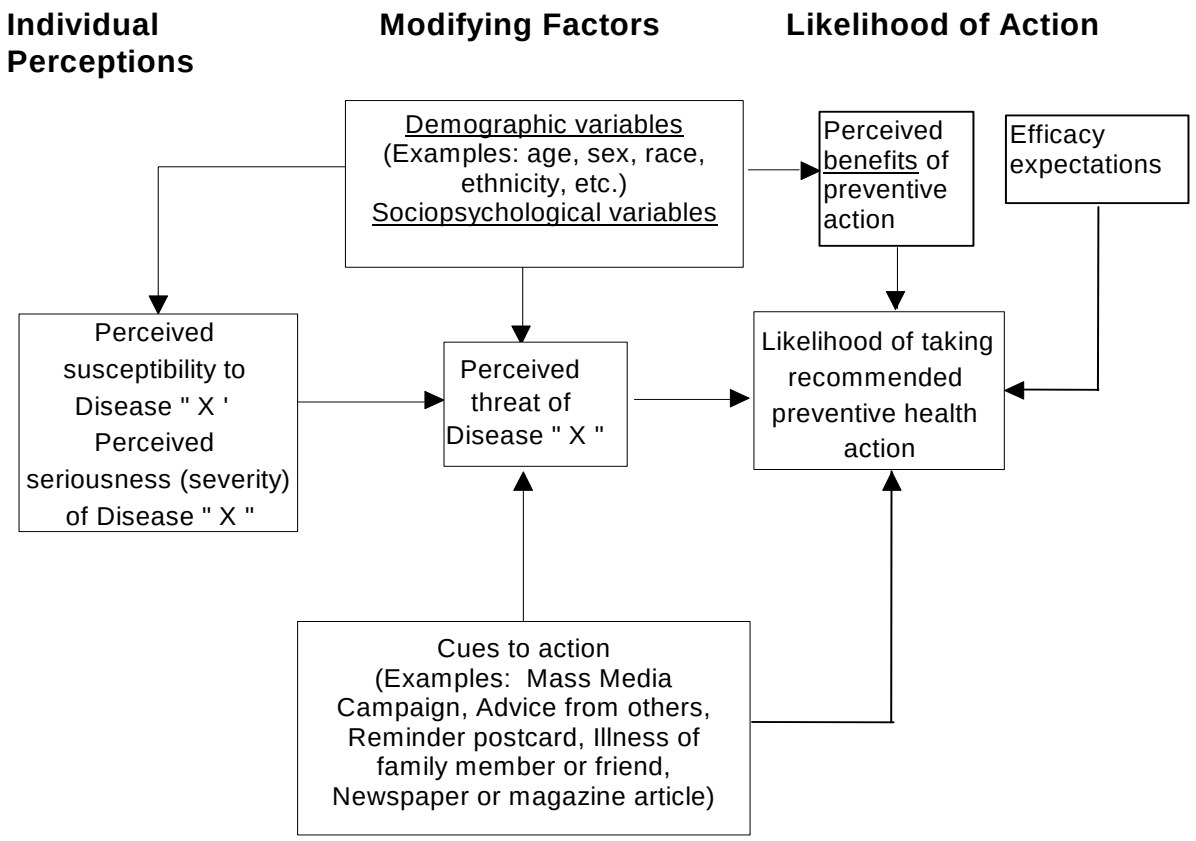
(Source: Vickberg, 1999)

3. Health Belief Model

The Health Belief Model affirms that readiness for action stems from an individual's estimate of the threat of illness or, as applied to a pregnancy prevention intervention, pregnancy and sexually transmitted diseases. This readiness for action also assumes the likelihood of being able, through personal action, to reduce that threat. Specifically, the Health Belief Model considers the individual's *perceived susceptibility* (a person's subjective perception of risk of contracting a condition); *perceived severity* (death, disability, pain, or other feelings about the relative seriousness and consequences of contracting illness, as well as effects on work, family or other social consequences); *perceived benefits* (beliefs about the relative effectiveness of various actions that could be taken to reduce the threat); and *perceived barriers* (the potentially negative aspects of a particular health action, including expense, danger, side effects, and pain).[39]

A fifth category, *other variables*, might also influence an individual's health-related behavior and should be taken into account as well. These other variables include demographics. For example, the younger adolescent who is at a cognitive state of concrete reasoning may not realize the true risk of pregnancy, or might perceive the side effects of some birth control methods as posing a greater danger than pregnancy itself. Figure 4 delineates the relationships among the five categories of variables postulated by the Health Belief Model.

Figure 4: Health Belief Model



(Source: Becker, M. H., Drachman, R. H., & Kirscht, J. P., 1974)

The Health Belief Model proposes that individuals consciously consider and weigh all the different variables in deciding the actions they will pursue. A kind of "cost-benefit analysis" is thought to occur in which an individual weighs opposing or conflicting options. The cost side consists of susceptibility and severity factors, while the perceived benefits of taking action and the ability to overcome perceived barriers to action make up the benefit side. Other variables can affect either costs or benefits. Individuals are most likely to take action when they believe they are susceptible, when the condition is severe, when the available course of action is beneficial in reducing susceptibility or severity, and when the costs of inaction outweigh the benefits. Also inherent in this theory are the concepts of self-efficacy and outcome expectancy: individuals must not only believe a specific action will lead to a particular desired outcome,

but they must also believe they will be able to initiate the behavior required to produce the outcome. Thus, an adolescent who desires to graduate from high school and proceed to college will need to weigh the pros and cons of being involved in a relationship that might result in an unplanned pregnancy that might well interfere with their life plans.

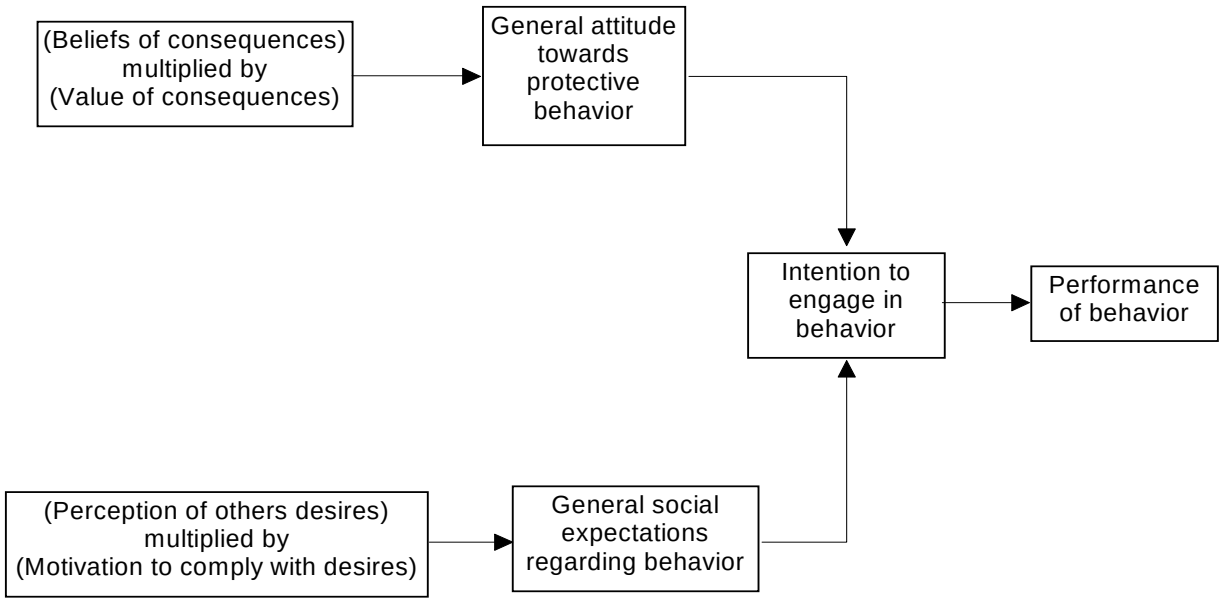
A concept that was not originally part of this theory, *cues to action*, has become a prominent component of the Health Belief Model. Put simply, cues to action activate and stimulate behavior. For example, a negative pregnancy test may give an adolescent such a scare that she begins to practice effective and consistent contraceptive use from that point on or may opt to become abstinent. An adolescent may also model behavior he or she sees through the media. For example, if sexual situations presented in a television show do not include contraceptive cues, or effective negotiating skills to delay or abstain from sexual intercourse, a unique opportunity to help shape behavior has been missed.

In applying this theoretical framework to a pregnancy prevention intervention, a counseling component might be included that stresses cues to action and personal perceptions of the negative consequences of an unplanned child or a sexually transmitted disease, particularly in relation to the adolescent's education and career aspirations. Counseling should also address such perceived barriers to action (an important factor in the Health Belief Model) as poor communication between the partners about delaying sexual relations, or using birth control if they do have sex. The Health Belief Model emphasizes personal goals and optimism about the future, self-efficacy, threat appraisal, and problem-solving and decision-making skills, all of which could be incorporated into educational interventions that feature counseling, youth development, and mentoring components.[40,41,42]

4. Theory of Reasoned Action/Theory of Planned Behavior

The Theory of Reasoned Action proposes that willful behavior is predicted by an individual's intention to perform a behavior. The intention to perform the action is influenced by two forces: 1) attitude toward performance of the behavior (e.g., whether engaging in the behavior is considered good or bad) and 2) the individual's belief in the subjective norms that dictate societal expectations regarding that behavior (e.g., what the individual believes family and friends think they should do). Furthermore, attitudes and subjective norms are each comprised of two components. Attitude toward the specific behavior is a function of the individual's set of beliefs concerning the possible consequences for taking the action, weighted by an evaluation of the importance of the outcome. Subjective norms are determined by an individual's beliefs about what salient others (e.g., family and friends) think he or she should do regarding the behavior, weighted by the individual's motivation to conform to others' wishes.

Figure 5: Theory of Reasoned Action



(Source: Ajzen, I. & Fishbein, M., 1980)

While behavioral intention is a *cause* of behavior, it is not usually sufficient in itself to predict behavior. Background, personality, and other social and psychological variables influence attitude and subjective norms. Attitude and subjective perceptions of norms have an effect on intention. In turn, intention influences behavior.[43,44]

Following his conceptualization of the Theory of Reasoned Action, Ajzen later proposed a Theory of Planned Behavior, which is an extension of the Theory of Reasoned Action.[45,46] A third conceptually independent variable (the first being attitude, the second subjective norms), *perceived behavioral control*, was added to the Theory of Planned Behavior. Perceived behavioral control is defined as the perceived ease or difficulty of performing the behavior, and is factored into the person's intention to perform the behavior.

As applied to an adolescent pregnancy prevention intervention, factors from this theoretical framework that should be emphasized include *attitudes* (e.g., whether adolescents view having a child early in life as a positive or negative event), *perceived norms* (e.g., what adolescents believe their family and friends think they should do regarding delaying sexual activity and pursuing further education), and *perceived personal control* (e.g., whether adolescents feel they have the negotiation skills to delay having sexual

intercourse). Other factors to emphasize in educational, counseling, and media interventions include perception of consequences, perception of barriers to taking protective action, and perceived support from other people who matter to the adolescent, such as his/her partner. Threat appraisal, in the form of personal vulnerability to pregnancy or decision-making skills, should also be stressed in the intervention.

5. Social Learning Theory

Social Learning Theory posits that behavior is the result of "reciprocal determinism"—the continuing interaction between a person, the behavior of that person, and the environment within which the behavior is performed. The constant interaction between these factors is such that a change in one has implications for the others. Behavior can result from the characteristics of a person or an environment, and it can be used to change that person or environment as well. Behavior is viewed not in isolation, but rather as the outcome of the dynamic interaction of personal and environmental variables.

The two most important variables that Social Learning Theory takes into account are self-efficacy and modeling. Self-efficacy, or the confidence in one's ability to successfully perform a specific type of action, is considered by Bandura (the "father" of Social Learning Theory) to be the single most important aspect of the sense of self that determines one's effort to change behavior.[46] That people learn not only from their own experience, but from the actions and reactions of others as well, is defined as imitation or modeling, a basic premise of Social Learning Theory. Other important variables include knowledge, skill, problem-solving, expectations, self-control, emotional coping, perception of the environment, attitudes, beliefs, intent, and motivation. The term "personal variable" refers to an objective notion of all the factors that can affect an individual's behavior that are physically internal to that individual. "Environmental variables" include observational learning (modeling), reinforcement, family members, peers, friends, opportunities and norms—in short, all the factors that can affect a person's behavior that are physically external to that person.[47]

In applying Social Learning Theory to adolescent pregnancy prevention, a major component would be modeling: adolescents imitate behavior from others in their environment through observational learning. It is often the job of health educators and counselors to help adolescents recognize that different, sometimes conflicting, social norms may well exist in their community or environment. The messages they receive about sexual behavior from the media, from their peers, or from family members, religious leaders, and others, will almost inevitably be different to some extent. By providing adolescents with an increased awareness of the influence of other significant individuals in their lives, as well as knowledge and negotiation skills about abstinence and contraceptives, the chances of an unplanned pregnancy can be

lessened. In addition, by utilizing observational learning, adolescents can learn and practice appropriate pregnancy prevention behaviors through guidance from mentors, parents, friends, teachers, community role models, and the media. The greater the reinforcement across all these sectors, the greater the likelihood of successful transmission and acceptance of the message. These personal and environmental variables are examples of factors that should be emphasized by the program staff as part of their education and counseling efforts.

6. Attribution Theory

Central to Attribution Theory is the assumption that people ask the question "Why?" to ascribe causes and make sense of the world. Attribution Theory describes the behavioral process of explaining events and the behavioral and emotional consequences of those explanations. Assignment of causes to conditions (the situations and individuals' experience) is believed to make effective management possible and guide future action. Internal attributions (those that are the result of the individual's own actions) and external attributions (those that are due to luck or chance), personal forces, and environmental factors all operate on the individual. The balance determines the attribution of responsibility that the individual ascribes to his or her own ability to influence change.

The kinds of attributions individuals generate have significant implications for subsequent thoughts, expectations, feelings and actions. Internal attributions for failure, such as failing to seek a volunteer opportunity in the community or to use a contraceptive because it was inconvenient or would "spoil the mood," result in deficits in self-esteem. In contrast, external attributions for failure, such as the inability to find any community opportunities to develop computer skills or to obtain contraceptives, do not result in deficits in self-esteem.

Individuals are in some part information seekers who try to lessen ambiguity in their lives. Attributions render the world predictable and controllable. Individuals are especially motivated to conduct attributional searches when faced with ambiguous, extraordinary, or uncontrollable situations (e.g., illness) and ask "Why me?" They then attempt to explain why something did or did not happen. With regard to adolescent pregnancy, the factors that bear emphasis within this theoretical framework include self-efficacy and conviction about one's ability to take corrective action, e.g., giving an adolescent the tools and sense of self-confidence and capacity to delay early childbearing. The adolescent could also be counseled concerning their perceived perceptions of the consequences of an unintended or mistimed pregnancy, emotional coping responses, and learning from past experiences. For example, a family planning counselor might wish to emphasize how the adolescent was feeling as she was waiting

for pregnancy test results, and encourage her to consider how she can avoid this anxiety in the future. Or, the counselor could emphasize how much the adolescent had expressed a desire to go to college, and how raising a child at this point in her life would interfere with that dream.

7. Protective Motivation Theory

Protective Motivation Theory emphasizes cognitive processes in mediating attitudinal and behavioral change (Figure 6). Motivation to act is based on threat appraisal (an individual looks at the severity and magnitude of an event and the probability that the event will occur to them) tempered by coping appraisal (the individual assesses the efficacy of a protective action and his/her ability to cope with stressors). A self-efficacy component is built into the model. Individuals must believe that they have the ability to adopt a new behavior and ward off the perceived threat. Information about the threat provides the impetus for action and changes in beliefs.

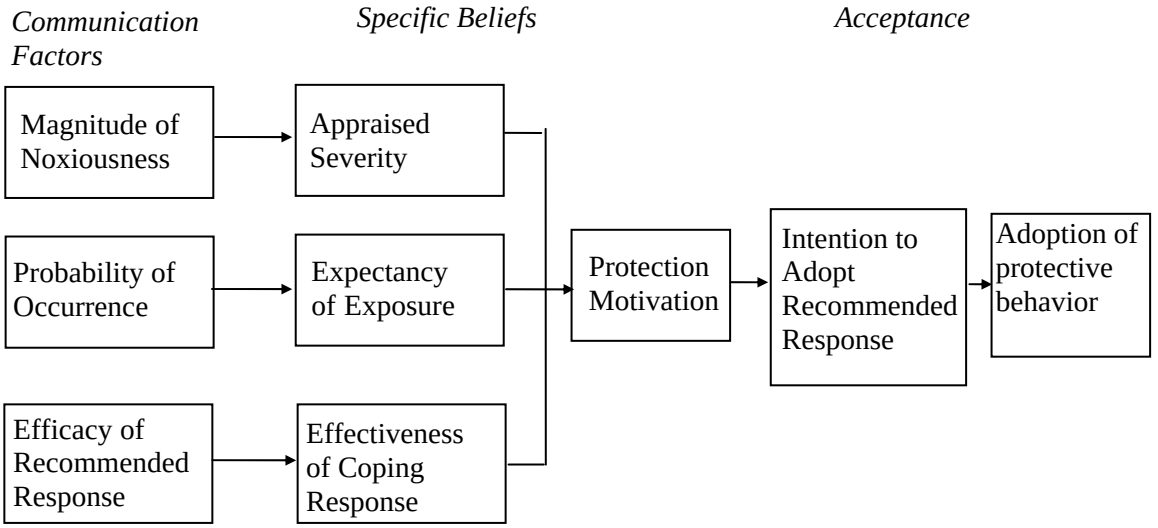
As applied to pregnancy prevention, Protective Motivation Theory posits that individuals are most likely to avoid pregnancy if: 1) they believe there is a good chance of becoming pregnant (or impregnating someone), and if 2) they protect themselves (either by abstaining or using an effective method of birth control). Reinforcement is also built into the model; internal and external rewards increase the likelihood for action.[50]

In applying this theoretical framework to the development of an adolescent pregnancy prevention program, the perception of consequences and external rewards are factors that should be emphasized. For example, a teenager who presently wants to delay having a child so that they can go into vocational training will seek avoiding pregnancy and thus reflect on the perceptions of the potential consequences if the pregnancy does occur. External motivating rewards should also be emphasized in counseling teenagers, for example, considering how much more supportive their relationship with their family will be if they pursue future aspirations that don't involve being a teenage parent.

Other important components of Protective Motivation Theory are perceived barriers to taking protective actions, achievement motivation, and self-control. These three variables all affect attitudinal and behavioral change, and their messages can easily be incorporated into a variety of settings, including schools, recreational settings, and media campaigns.[48] For example, a counselor can help an adolescent understand situational factors, such as being alone with a boyfriend and drinking, that threaten her ability to protect herself against the risk of pregnancy or an STI (alcohol may present a barrier to taking self-protective action). It is particularly useful for the adolescent to learn not only how to identify these

situational factors herself, but to have the ability to control them (self-control to avoid alcohol particularly when she is alone with her boyfriend), thus protecting herself from the possibility of pregnancy and failure to complete school, reflecting achievement motivation.

Figure 6: Protective Motivation Theory



(Source: Rogers, R.W., 1975)

8. Self-Regulation Theory

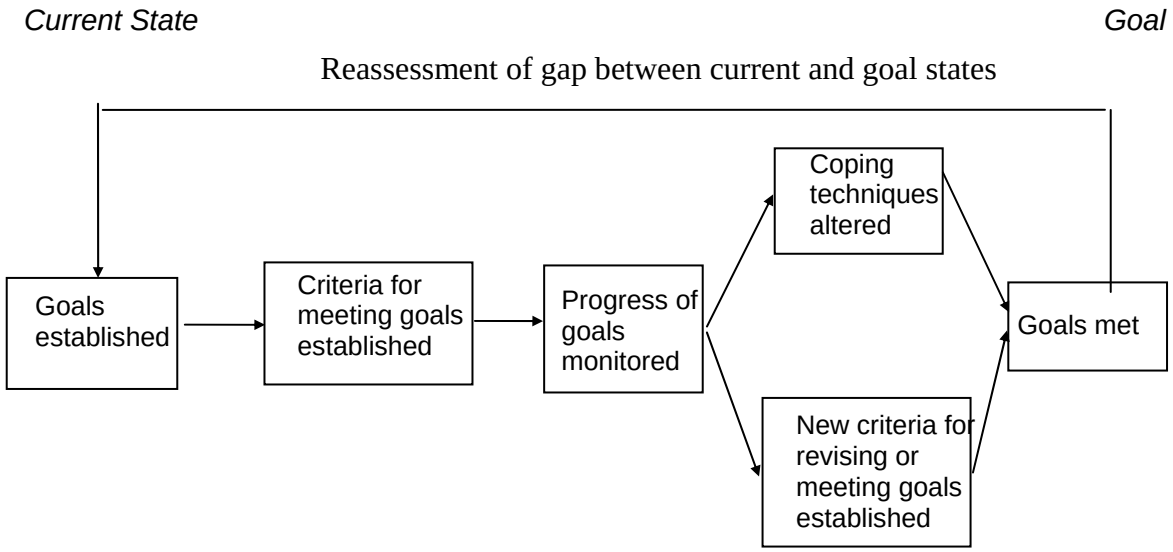
This model acts on the principle that individuals operate like feedback systems, regulating their relationships to the environment (Figure 7). They establish goals, generate methods for meeting these goals, and then establish criteria for monitoring progress toward their goals. The information gleaned from this monitoring process is used to alter coping techniques, establish new criteria for revising goals, and evaluating responses. Individuals are viewed as active problem solvers who attempt to bring their current state closer to their goal state. This model specifically includes an emotional component, acknowledging that emotional responses to threats may be perceived differently than cognitive responses. The individual's sense of efficacy, the belief that they can plan and act in a certain manner, generates emotions which affect their coping reactions.

Leventhal, Meyer, and Gutmann (1980)[49] contribute the following notable components of the Self Regulation Model:

- Extracting information from the environment.
- Generating a representation of the danger of the illness to oneself.
- Planning and acting (including imagining response alternatives to deal with problems and the emotions they generate, then taking actions to achieve specific effects).
- Monitoring or appraising how one's coping reactions affected the environmental problem and oneself.

In the application of this theoretical framework to adolescent pregnancy prevention, threat appraisal, problem solving, and achievement motivation should be stressed. How adolescents view becoming pregnant or impregnating their partners is an obvious example of threat appraisal, and how to demonstrate love for one's partner without the fear of pregnancy is an example of problem solving. In addition, achievement motivation, such as how to delay childbearing will help adolescents achieve mutual goals, a component that can also be stressed and reinforced by parents, counselors, teachers, and other mentors. Other factors of importance include personal perceptions of consequences, perceived barriers to taking protective action, personal goals, self-efficacy, decision making, emotional coping responses, personal power, and self control.

Figure 7: Self-Regulation Theory



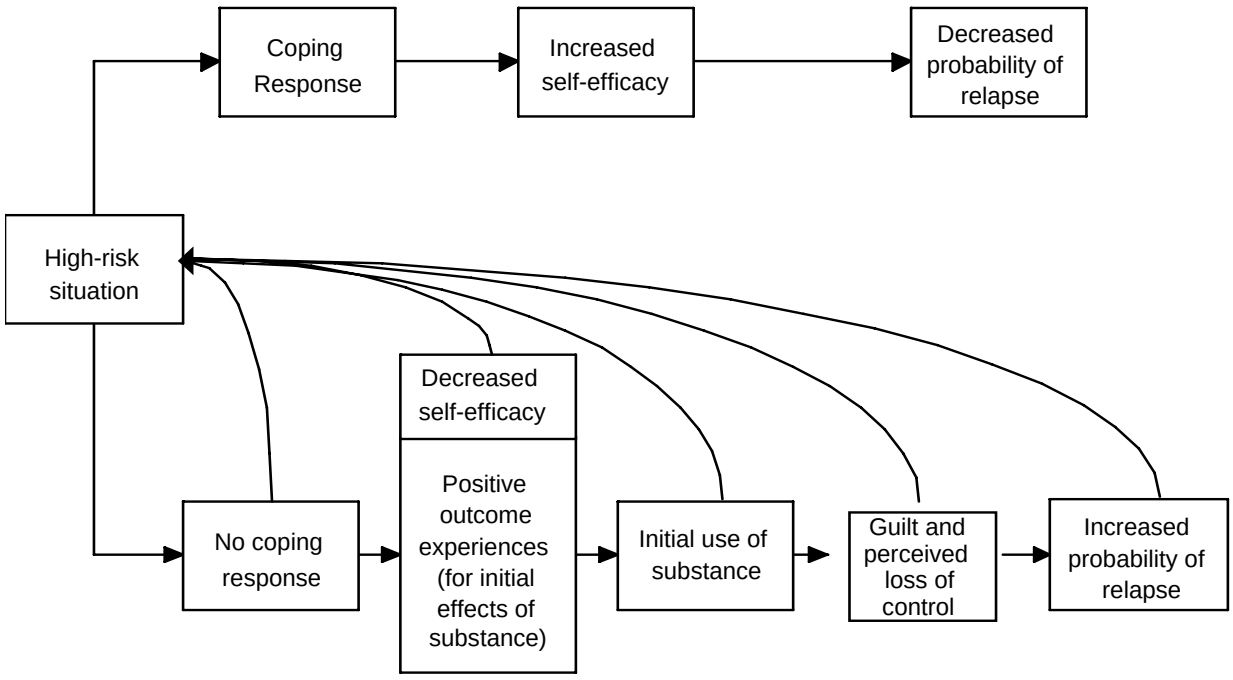
(Source: Levanthal, H., Meyer, D., & Gutmann, 1980)

9. Relapse Prevention Theory

Relapse Prevention Theory is less a theory than it is a generic term referring to a broad range of strategies

designed to help individuals anticipate and cope with lapses in appropriate behaviors. In achieving behavior change, individuals typically go through the stages of initiation, modification, cessation of the old behavior, and maintenance of cessation. Relapse can occur at any time during this cycle. An individual who has "relapsed" has experienced a breakdown or failure to alter or change a specific habit pattern and has returned to previous habits. Further, the individual's beliefs about the course of behavioral outcomes and causes of relapse affect outcome behavior. For example, individuals who believe they will not be able to avoid becoming pregnant and as a result don't use effective protection, will likely engage in sex without protection and become pregnant. On the other hand, individuals who understand that the outcome of relapse (pregnancy) necessitates an active behavior of abstinence or utilizing effective birth control, and then acting on that understanding, are less likely to become pregnant.[51]

Figure 8: Relapse Prevention Theory



(Source: Marlatt, G. A., & Gordon, J.R., 1985)

Three high-risk situations are primarily associated with relapse: negative emotional states (the individual is in a bad mood, frustrated, angry, anxious, lonely, depressed or bored); interpersonal conflict (a recent

or ongoing conflict with a partner, friend, family member or employer); or social pressure (the individual is responding to another person or group who influence the individual to perform the negative behavior). Implemented primarily in programs that address addictive disorders, Relapse Prevention Theory focuses on changing habitual patterns through the use of self-management and self-control techniques. As applied to pregnancy prevention, self-management/self-control techniques might mean avoidance of sex without contraception. The concept of self-efficacy (e.g., belief in one's ability to prevent pregnancy) is an important component of Relapse Prevention Theory. Avoidance of addictive patterns (e.g., unsafe sex) depends on an individual's measure of self-efficacy, with the likelihood of relapse dependent upon the strength of that measure.

10. PRECEDE Framework

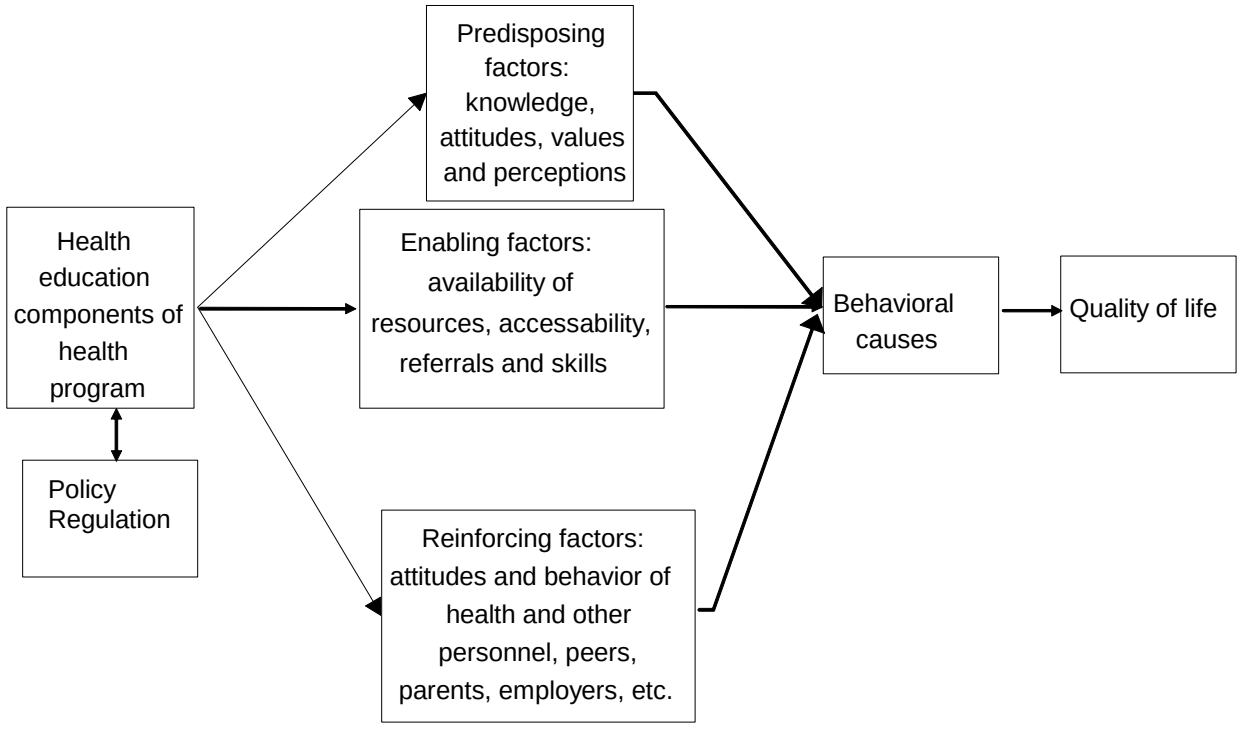
Largely a heuristic framework, PRECEDE is presented as a planning model rather than as a formal theory. The overriding principle of this model is that behavior change is voluntary in nature. This framework seeks to empower individuals with knowledge, understanding, skills, motivation and community involvement to improve their quality of life. As applied to pregnancy prevention, individuals have knowledge and understanding of their sexual behavior, the skills to avoid pregnancy-risk behaviors, the motivation to want to avoid these behaviors, and the community involvement to change policies and regulations which influence pregnancy-risk behaviors.

PRECEDE is the acronym for "predisposing, reinforcing and enabling constructs in educational diagnosis and evaluation."[52] Three classes of factors have been identified as "pre-behavioral" (antecedents to behavior) and as having the potential for affecting health behavior:

1. Predisposing factors or personal preferences (attitudes, beliefs, values, perceptions) that provide the motivation or reason behind the behavior change. Although self-efficacy is included as a construct, demographic characteristics were dropped from this category as they are not readily susceptible to intervention or change and are reflected in other constructs of all three pre-behavioral factors of PRECEDE.
2. Reinforcing factors or rewards or reinforcements refers to the feedback individuals receive from others and the environment. These incentives, such as praise, social support, or alleviation of symptoms contribute to repetition or persistence of behaviors.
3. The final pre-behavioral construct, enabling factors, includes objective characteristics of individuals, communities and environments that support or hinder behavioral change. Enabling factors include objective, not perceived barriers. Perceived barriers fall under the category of predisposing factors. Enabling factors allow individuals to overcome objective barriers by

providing the means to act on their predispositions by means of available resources, supportive policies, assistance and services.

Figure 9: The PRECEDE Framework



(Source: Green, L. W., Kreuter, M. W., Deeds, S. G., & Patridge, K.D, 1980)

The factors to emphasize in an adolescent pregnancy prevention program include predisposing, enabling, and reinforcing factors. Predisposing factors provide the impetus or rationale for a behavior (e.g., choosing to continue with one's education instead of having a baby) and enabling factors provide the means for people to act on their predilections (e.g., ready access for adolescents to good educational institutions and transportation and supplies). Reinforcing factors provide ongoing rewards or incentives that contribute to repetition or persistence of behaviors (e.g., earning good grades and continuing with one's education as a viable alternative to early childbearing).[52]

11. Psychosocial Model

Based on Systems Theory, the Psychosocial Model posits that people have problems in living due to the disequilibrium between themselves and their environments. Dealing with a multiplicity of psychological, family, and social forces at work, individuals try to find a "goodness of fit" between themselves and their

environments. In striving toward this goodness of fit, individuals attempt to change aspects of themselves or conditions in their environments.

This model attempts to help individuals better shape their environments and to enhance their self-esteem and perception. Individuals are not expected to merely adjust to their systems; rather they learn to negotiate them. Once individuals learn behaviors, they can use what has been learned to solve future problems.[53]

The Psychosocial Model asserts that an individual's current functioning is influenced by his or her past, as well as current events. For example, a female adolescent who has not practiced effective contraceptive use in the past and has not yet become pregnant may mistakenly believe she will never get pregnant. Also, a past pregnancy may influence later pregnancies. In fact, research has demonstrated that young women who become pregnant before the age of 20, often become pregnant a second time due to a confluence of different factors. An adolescent who has experienced academic failure is likely to be impacted in her future efforts to improve her academic standing, even if an academic tutoring program is actually available.[54]

In addition to past and current events, other external factors, such as the opinions, statements, and actions of a significant other will influence an individual's perceptions. An individual does not react to the environment as it exists, but rather, as he or she sees it. For example, misperceptions are not due to an individual's personality alone; rather they may result from direct experience (past and current) and also the opinions of trusted others. The power of a trusting relationship can be used positively, as when parents communicate with their children about their future goals and dreams. Conversely, trusting relationships can have a negative influence, as when peers provide misinformation ("You can't get pregnant the first time," etc.). This trusting relationship can be utilized on a broader level in the form of incorporating responsible community social norms concerning sexual activity, implementing more mentoring programs, and creating more adult relationships with youth.

This model stresses that behavior must be viewed from a multiple-level approach.[53] Five levels of influence have been identified regarding health-related behaviors, including:

1) Intrapersonal, or individual factors, including an adolescent's knowledge and skills regarding their options, including abstinence and the use of birth control;
2) Interpersonal factors, such as communication skills between adolescents and their partners and families;

3) Institutional or organizational factors, such as the availability of tutoring and academic enrichment programs, summer jobs, mentoring opportunities, as well as contraceptive services through community clinic and outreach workers;
4) Community factors, such as a established norms or a community-based media campaign aimed at supporting youth and their life options; and
5) Public policy factors, such as the availability of government-subsidized youth programs and services provided to adolescents.

All five levels of factors must be taken into account when planning a health promotion intervention.

12. Social Ecology Theory

Using this theoretical framework, health promotion, and specifically pregnancy prevention, is viewed not only from an individual perspective, but rather more broadly, as the individual is embedded in and influenced by numerous systems or groups. Whether an individual feels supported or neglected by these systems also impacts behavior. Thus, if social institutions do not invest in young people's futures, pregnancy becomes an attractive alternative where personal meaning is gained through becoming a parent, even prematurely.[55]

Social Ecology Theory was developed as a response to the severity and complexity of chronic health conditions that are rooted in a larger social, cultural, political and economic fabric.[56] Traditionally, the emphasis on risk for unhealthy behaviors that can lead to pregnancy has been placed on individual factors. As a result, the majority of health promotion programs often focus solely on changing individual characteristics, rather than seeking to change environments, laws or policies. Social Ecology Theory understands and addresses the fact that behavior does not occur in a vacuum. This theory incorporates environmental resources and interventions as an adjunct to interventions that are solely targeted to the individual level.

Social Ecology Theory assumes that the effectiveness of health promotion (i.e., pregnancy prevention) can be enhanced through multilevel intervention packages that combine both behavioral and environmental modification strategies.[55] The current wisdom in health promotion holds that ignoring behaviors beyond those at the individual level will produce less of an impact on health status.
In applying Social Ecology Theory to pregnancy prevention, two key elements must be emphasized. First, it is important to integrate health promotion interventions across multiple life domains, such as the home (family members practice open communication concerning values related to education, personal

responsibility, delaying sexual activity and /or supporting contraceptive use), the school (including comprehensive school-based family life education curriculum and academic enrichment programs, tutoring, and job shadowing), the community (employment and recreational opportunities for youth, mentoring, and health services that are affordable and accessible in the community), and in political settings (including legislation addressing poverty issues). The second key element, opportunities for enhancing community well-being, can be realized through cultural change. For example, through the transformation of norms, values and policies regarding the need to invest in young people, social support for comprehensive youth programs can be strengthened.

13. Theory of Gender and Power

The Theory of Gender and Power is a social structural model that seeks to understand women's risk as a consequence of different social structures.[57] According to this theory, three major structures characterize gendered relationships between men and women: The sexual division of labor, the sexual division of power, and the structure of cathexis.[58] These three overlapping structures serve to explain how and why many people assume gender roles. These structures exist at the societal level and at the level of social institutions. Examining structural inequalities in these areas enable one to assess the exposures and risk factors of all three structures as they interact to cause an adverse impact on women's (and men's) health.

Table 5: The Theory of Gender and Power on Women's Health and Teenage Pregnancy

Societal Level	Institutional Level	The Social Mechanisms	Exposures	Risk Factors	Biological Factors	Disease
Sexual Division of Labor	Work Site School Family	Manifested as unequal pay, which produces economic inequities for women	Economic exposures Risk factors	Socio-economic		
Sexual Division of Power	Relationship Medical System Media	Manifested as imbalances in control which produces inequities in power among women	Physical Exposures	Behavioral Risk Factors	Douching Pregnancy Contraceptive Use	HIV
Structure of Cathexis: social norms and affective attachments	Relationships Family Church	Manifested as constraints in expectations, which produce disparities in norms for women	Social exposures	Personal risk factors		

(Source: Wingood and DiClemente, 2002)

In applying the theory of gender and power, it is assumed that gender-based inequities and disparities in cultural expectations that arise from each of the three structural components produce differing risk factors that shape teen risk for unintended pregnancy and STIs. Risk factors here are understood as external to

teens that may influence their sexual risk taking behavior and subsequently, their likelihood for unintended pregnancy. In the theory of gender and power, each structure can not be examined without also examining the others because each structure constitutes different risk factors and exposures that increase young women's vulnerabilities. Thus, it is imperative that all three structures are examined as overlapping.

IV. Synthesizing Theories and Models to Fit Your Community's Teen Pregnancy Goals

Theoretical Models and Their Application to Health Promotion Practice

In reviewing various theoretical frameworks, it may appear difficult to choose the correct model when planning a specific intervention or when re-conceptualizing or making changes in an existing program. The choice of which theoretical framework to apply (or which combination of elements from one or more theories) will depend on: 1) the specific level at which change is targeted (e.g., individuals, groups, organizations, and/or overall communities), 2) the desired change, and 3) the type of behavior your program or intervention seeks to address.

Public health problems must be approached from multiple levels. In addition to education and counseling, interventions aimed at behavior change must also include such components as planning, community support, and organizational change. These components must be addressed by whatever theoretical frameworks are adopted. There are three primary levels at which to develop and implement an intervention: individual, interpersonal, and community. The *individual level* is the most basic level of health promotion practice, where the focus is on behavioral factors such as knowledge, attitudes, and beliefs and skills, motivation and past experiences regarding academic success, sense of future, and sexual activity, contraception and pregnancy. Adults must also consider their own behavior and modeling in these arenas and whether or not they exhibit responsible behavior, for example, in planning for their own lives, including thinking about their education plans, delaying childbearing and protecting themselves against STDs. The viable alternatives to early childbearing they and their communities provide to adolescents must also be considered, including opportunities for adolescents to connect with and strengthen the one-to-one relationships with meaningful adults in their lives.

At the *interpersonal level*, people interact with the beliefs, advice, and support of others concerning life opportunities, the impact of sex and pregnancy, and help model their own feelings, behaviors and health. Family, peers, co-workers, and others in the individual's environment can and do influence individual

behaviors. The interpersonal level also includes factors related to the individual's perceptions of and interaction with their environment.

Community health promotion practice goes beyond the individual and addresses environmental influences and interpersonal relationships through some kind of comprehensive effort. Programs and policies that support youth assets, such as interventions that combine mentoring, academic tutoring, recreation, mentoring, life skills training, and health and mental health care, are important elements that must be included in community-level pregnancy prevention programs. It is also important to note that many of these programmatic elements are not relevant solely to adolescent pregnancy prevention, but to the prevention or amelioration of other adolescent risk-taking behaviors, such as drug and alcohol use, as well.

Finally, at the *social-structural level*, people's exposures to organizations, institutions, and cultural expectations and patterns are considered as shaping people's actions and meanings applied to those actions. Access to education, job training, cultural resources, and other means of moving one out of poverty and low educational attainment situations are understood as capable of reducing risk.
All the theoretical frameworks discussed in this document can be classified according to either the individual, interpersonal, or social-structural level of intervention. However, some theories do not necessarily fit neatly into one level, and instead intersect at two levels. For example, while the Health Belief model primarily addresses individual factors regarding behavior change, external rewards are built in as well. Thus, environmental influences do interact with individual characteristics.

Which theoretical frameworks or combination of theories to apply to a specific pregnancy prevention program or community-wide adolescent pregnancy prevention initiative depends upon where the change is directed. The premise that underlies most current thinking is that comprehensive, multifaceted interventions are needed at all three levels: individual, interpersonal, and community. Thus, as program planners consider which frameworks to apply, they should consider the overall approach they are planning to pursue. One particular agency does not need to be responsible for offering interventions at all levels. In fact, collaborative efforts among different agencies and stakeholders may very well help mobilize the multiple concurrent efforts that are needed and directed at both the individual and the community levels.

The Transtheoretical Model, for example, directs the level of intervention primarily at the individual. This model focuses on various stages of individual change with very little mention of the surrounding

environment. Using the Transtheoretical Model, a program may first attempt to present knowledge to adolescents concerning their risk for pregnancy as a means of motivating them to shift from the pre-contemplation stage into contemplation, where direct service providers are then in a position to affect and reinforce behavior change. Concurrently, the counselor may also incorporate aspects of the Developmental Assets/Resiliency model that emphasize the role of self-efficacy in supporting the individual's sense that she or he does have the needed control over their own lives to mobilize knowledge for constructive action, including the pursuit of education and employment opportunities as viable alternatives to early childbearing.

Theoretical Models within an Adolescent Development Framework

An adolescent's developmental process should also be taken into account when developing and conducting program interventions. The adolescent's stage of development must be carefully assessed: providing information in too abstract a format will be ineffective with teenagers who are unable to foresee future consequences for themselves. An adolescent who looks physically mature may be treated as an adult by a counselor or other provider. But the young teenager who looks mature may actually still be thinking in concrete terms and may be unable to apply abstract concepts (such as the risk of pregnancy) to his/her own life. That adolescents who have often not matured beyond concrete thinking are treated as abstract thinkers is problematic, because adolescents who are still thinking at the concrete level have a narrow view of reality. They pay attention only to the immediate effects of their own actions and are not cognitively able to consider future events. In contrast, adolescents who are abstract thinkers are able to anticipate future events and can mobilize their efforts to prevent negative outcomes.

Erroneous perceptions of a teenager's cognitive stage of development may well prevent reaching him or her in the most appropriate and effective manner. Health messages and recommendations must be conveyed in a way that is developmentally appropriate for the adolescent if they are to be truly understood and acted on. Providers also need to recognize that adolescents who are capable of abstract reasoning may revert back to concrete reasoning when dealing with personally challenging issues, such as whether or not to become sexually active or encourage their partner to use a contraceptive method. Strengthening coordination efforts across or within programs that offer both education and counseling interventions may best facilitate the reduction in teen pregnancy. Ideally, family members, peers, teachers, and other adults in the lives of adolescents would also reinforce messages of responsibility and help provide them with the nurturing and support they need in their transition to adulthood. Program planners also need to consider how they can develop community-wide interventions that respond to negative or

counterproductive forces in the social and economic environment as a means of providing viable alternatives to early childbearing.

A Shift from Individual to Interpersonal and Social Structural Pregnancy Prevention Approaches

Thus far, we have primarily covered individual-level approaches to adolescent pregnancy prevention because historically these interventions have accounted for the great majority of programs. However, at this point in the evolution of pregnancy prevention programs, we can expand our focus to interpersonal and community-wide approaches that emphasize structural components, even though we have far less programmatic and evaluation experience in these domains. At the interpersonal level, individual as well as social/environmental factors must be taken into account. For example, Social Learning Theory posits that behavior is the result of the continuing interaction between an individual, the behavior of the individual, and the environment within which the behavior is taking place. At the interpersonal level of intervention, an adolescent pregnancy prevention program should not only take into account personal variables, but also structural/environmental variables that shape both behaviors and access to structural supports, such as poverty reduction, better schools, access to resources, and community economic development. Through links with other programs, the intervention can be aimed both at personal characteristics (e.g., attitudes, skills, values, knowledge) and the adolescent's interpersonal environment (e.g., family relationships, peer contacts, mentoring, etc.).

The third level, social structural intervention, is potentially the most far-reaching. Here, interventions in school settings, future vocational training, and educational opportunities serve as protection for teens. Combined, productive individual and environmental interaction is further bolstered by developing an interpersonal climate in which positive adolescent behavior is promoted and reinforced**.** For example, interventions that combine decision-making skills as applied to abstinence and/or contraceptive use (individual factors) with exposure to positive role models and affirming life experiences (environmental factors) will produce a more comprehensive and reinforcing set of messages. This backed by an array of institutional services, such as job training and educational opportunities that promote gender, race, and class equity, may further ameliorate and reduce the burden of teenage pregnancy. This kind of individual and environmental synthesis is likely to result in more effective adolescent pregnancy prevention programs. However, arriving at a community consensus that will support and affirm both those adolescents who are and who are not sexually active, and encourage health-promoting behaviors, requires concerted effort. This means a consensus-building effort that involves a wide range of community stakeholders, including young people themselves, their parents and families, as well as teachers, health

providers, the business sector, the faith community, community-based organizations, the media, and policymakers.

Modifying Factors Associated with Adolescent Pregnancy

Beyond the psychological foundations espoused by theoretical frameworks that attempt to explain why individuals practice (or fail to practice) health behaviors related to adolescent pregnancy prevention, there are other significant modifying factors involved as well. These modifying factors are psychological and sociological variables that also contribute to or are associated with teenage pregnancy. These variables should not be considered as separate factors whose sole purpose is to fill in the gaps in the theoretical frameworks; rather, these modifying factors are often intertwined with the theoretical variables previously discussed. For example, the individual characteristics of biological, cognitive, emotional and social development listed as modifying factors can greatly influence the adolescent's readiness for change and movement to the next stage, as postulated by the Transtheoretical Model. Some of these modifying variables have already been discussed as aspects of the theoretical frameworks, but deserve special additional emphasis. Others, such as the powerful influence of the media, and community norms on early childbearing, can also have a great impact on teenage prevention efforts.

There are many modifying factors that influence the incidence of adolescent pregnancy, including educational background, family characteristics, income level, and religion. By recognizing the influence of these factors within planned interventions, practitioners can attempt to combat or lessen their impact or their outcomes. Populations who exhibit greater numbers of sociological risk factors, such as poverty or low educational achievement, will most probably benefit to a larger degree from a greater intensity of program interventions tailored to their specific needs.

Another way to combat negative modifying factors is for planners and practitioners to be creative in intervention approaches. While a counselor or other service provider may not be able to change certain negative family characteristics that affect the adolescent, he or she can still provide an effective intervention. If a teenager has a drug-addicted mother and an absent father, that doesn't mean the child is doomed to fail. In fact, this young person can still graduate from high school or college and be a role model to siblings, although formidable challenges must be overcome. The process of adolescent self-actualization does not have to come from being student body president at school, and health educators and providers can help emphasize the point. Acting as head of the household and taking care of the family can draw out a positive sense of self-actualization too. It is the job of the provider to first identify the

modifying variables involved, and if they are "deficits," they can then help the adolescent understand how strengths (assets) can arise from deficits, and place more emphasis on the assets side of the ledger.

Table 6 shows a list of modifying factors, all of which have been associated with an increased likelihood of adolescent pregnancy.[1] The modifying factors were collected from a review of the literature that has identified those factors which have been shown to have the greatest influence with regard to the behaviors that are known to be related to adolescent pregnancy. Although many of these factors are powerful in and of themselves in explaining human behavior, they should not be seen as directly causal.

Although all of the modifying factors are important and should be considered as potential points for intervention, health behavior and pregnancy prevention research have consistently found four factors to be particularly influential: poverty, adolescent development, family variables, and incidence of sexual abuse. These four modifying factors therefore are given particular attention in this section. While a formal body of research continues to be developed in the field of adolescent pregnancy prevention, there is nevertheless a growing awareness of the relationship and co-variance between modifying factors and adolescent pregnancy. Profiles of adolescent risk-taking behavior that include sexual activity and tobacco, drug and alcohol use have documented the clustering of these modifying factors.[59]

Poverty

Many social structural variables are correlated with each other, further compounding the likelihood of pregnancy. For example, a low income level and low educational attainment, two risk factors for unintended pregnancy, are highly correlated. In fact, low income is related to almost all of the risk factors for pregnancy, including ethnicity, parental education level, family structure, having a mother who was a teenage parent, living in foster care, doing poorly in school, having low aspirations, and already being a teenage parent. Many risk factors antecedent to early childbearing are far more prevalent in adolescents from low socioeconomic backgrounds and are often the result of living in poverty.[1] For example, an individual who does poorly in school is likely to have low aspirations and as a result drop out of school, have a low education level and a low socioeconomic status. This fact underscores the importance of including psychological and social structural variables in pregnancy prevention strategies, as well as considering important points of intervention that result from these factors.

For example, while resolving the problem of poverty altogether may not be fully possible, recognizing and addressing some of the causes of poverty (such as poor education, lack of access to job training programs, and structural inequalities), as well as the effects that poverty has on adolescents is possible.

Building some tangible alternatives into the portfolio of program interventions allows for more effective outcomes. While it is not realistic for a family planning clinic to contemplate establishing a youth employment or academic tutoring program, memoranda of understanding and active referral relationships can be established with programs in the community that do provide these opportunities and services. Thus, the family planning clinic can play an active role in screening and triaging clients for other services it cannot provide. Although some family planning counselors may view this as an extra burden, they need to recognize the interrelationships between personal motivation, a sense that a decent future is possible, and the likelihood of increased contraceptive compliance.

Adolescent Development

Biological, cognitive, social and psychological factors make up adolescent development. Precocious biological development is related to early sexual behavior and pregnancy. Early biological development often results in a gap between biological and cognitive development. An adolescent who is biologically ready for sex may lack the cognitive ability to assess the risk of pregnancy or to seek contraceptive care in a timely manner. This gap between physical and cognitive maturity often contributes to the high incidence of unintended teenage pregnancies, particularly among younger adolescents. The older the adolescent at the time of sexual debut, the greater the likelihood that the adolescent will be using a method of birth control.[1]

At this period of development, adolescents are often trying to determine their role in life and find their identity.[59] In this struggle for identity, teenagers often strive for independence. In their attempt to prove that they are adult, they may engage in sexual activity, mistakenly believing that it will make them more mature. Social pressures and wanting to fit in with their peers may also strongly impact an adolescent's behavior. Peer pressure is often a factor mentioned as a reason for engaging in sexual activity.[1]

Family Attitude and Behavior Toward Sexual Activity

At the interpersonal level, the pregnancy status of teenage girls is strongly related to the family's (particularly the mother's) attitudes and behavior concerning sex. Teenagers whose mothers were sexually active at a young age are often sexually active at a young age themselves. Daughters of mothers who themselves were teenage parents are more likely to bear a child during adolescence. Researchers have found that among whites, daughters whose mothers had teenage births were more than twice as likely as daughters of older mothers to have a teenage birth. Among blacks, daughters of young mothers were about one-third more likely to do so. Those whose mothers have permissive attitudes about teenage and premarital sex also begin sexual activity at a younger age. Other factors that place their daughters at

high risk for pregnancy include lack of an adult role model, lack of support and affection, lack of supervision, and a sibling who is a teenage mother.[1]

By ascertaining which adolescents come from homes where the adolescent's mother or sisters were themselves teenage mothers, at-risk teenagers can be identified and targeted with special types of interventions. For example, the younger siblings of teenage pregnant or parenting adolescents could receive case management services that include special counseling, tutoring and recreational activities. Such services could represent an especially important tool for delaying early childbearing among this particularly vulnerable population and have been shown to be effective.[60]

Sexual Abuse and Violence

A history of sexual abuse is also a factor in adolescent pregnancy. Studies have found that sexual abuse may affect a child's or adolescent's cognitive, psychological and emotional development.[61] Here gender and power theory clearly has a role to play as young girls are often threatened with sexual abuse and violence. Factors that affect development can also lead to interference in adaptive functioning, including effective use of birth control. In an empirical study, when compared with non-victimized teenagers, victimized teenagers (those who experienced molestation, rape and sexual abuse) began intercourse one year earlier than their non-victimized counterparts.[61,62] Understanding how sexual abuse can affect an adolescent's childbearing behavior enables a program to address specific issues and build into it additional safeguards against unintended pregnancy. Because of reporting requirements, this is a particularly sensitive area that requires special training and preparation of counseling staff.

Apart from sexual abuse, youth violence was not viewed until recently as a modifying factor that was related to adolescent pregnancy, although professionals in the field are now reporting their observation of the correlation between violence and adolescent pregnancy. Violence can range from abuse experienced by dating and/or pregnant adolescents at the hands of their partners, to the pressure some adolescents feel out of fear of their own early demise to have a child before it is too late.[63]

Table 6: Modifying Factors to Consider Building Into The Development and Evaluation of Adolescent Pregnancy Prevention Programs

Some high-risk psychological and sociological factors to consider including in a program development that may not be included or emphasized in theoretical models:
Structural Issues:
• Socioeconomic status (particularly poverty, lack of education, and underemployment)
• Cultural Opportunities (access to resources)
• Violence
• Gender Inequalities
• Ethnicity
Interpersonal Issues:
• Family structure and functioning
• Family stability
• Educational attainment of parents
• Adult role model
• Peer pressure
• Affection
• Supervision
• Mother's attitude toward sex and sexuality
• Mother a teenage parent herself
• Pregnant/parenting sibling
• Number of siblings
Individual Characteristics:
• School performance and attendance
• Future aspirations
• Already a teenage mother
• Prior coercive sexual encounter
• Age of initiation of sex
• Frequency of sexual intercourse
• Use of cigarettes, alcohol and /or illicit drugs
• Number of partners[i]
• Knowledge, Attitudes and Beliefs
• Early and delayed biological development (physical development)
• Cognitive development[49]
• Emotional development[50]
• Psychological development
Other Characteristics:
• Accessibility to programs and supplies
• Use of contraceptives
• Desire to become pregnant

(Source: Kirby, 2001)

It is important to include strategies to address the psychological and sociological variables encountered by pregnancy prevention programs, and to make decisions about important points of intervention that might counteract these modifying factors.

Policy and Social Context

Beyond the important modifying factors described above, adolescent pregnancy and prevention intervention are also highly affected by the social and policy contexts that exist. Although all of the theoretical frameworks incorporate environmental factors to some extent, two important environmental influences that are not clearly addressed by many theories are funding and policy directives. Three of the theoretical frameworks, Developmental Assets/Resiliency, the Psychosocial Model and Social Ecology Theory, include administrative and policy diagnosis as a means of assessing the need for and availability of community and organizational resources, as well as the existence of barriers and supports. Social Learning Theory notes that the environment, including poverty level, welfare and unemployment, impact the behavior of the individual, and readiness to change, but this theoretical framework doesn't explicitly make any statement about the influence of funding or political directives.

The failure to include policy directives in theoretical frameworks that drive program implementation is a major oversight; these influences are in fact instrumental in shaping the environment and the options available to individuals. Public policies affect programs, which in turn affect the options made available to individuals.[64] Even when individuals are highly motivated to change their behavior, they may be limited in the steps they take due to funding and policy constraints. For example, a teenager with ambitious educational aspirations, but whose high school lacks advanced placement courses, is at a strong disadvantage compared to peers in better funded schools. Similarly, the teen who would otherwise be motivated to use contraceptives, but who lives in a community that lacks teen-friendly services, may not seek appropriate care. Policy is an integral component of effective pregnancy prevention programs, yet it is often overlooked or inadequately considered in the development of program interventions.

The existence of concrete, highly prioritized policies that ensure the availability of youth programs and services are key factors that have been shown to be important in affecting the incidence of adolescent pregnancy. Sufficient funding to ensure ready access to a wide range of comprehensive programs and services is also important. For example, classes that teach adolescents how to communicate with their parents and partners, as well as classes that teach parents of adolescents how to communicate with their child, can be an important component of the portfolio of approaches that a community may decide to pursue. By offering classes to all three target populations, communication, particularly about sensitive topics, has a greater likelihood of taking place. Social norms that promote open communication and responsible behavior must be encouraged and reinforced by a broad range of stakeholders, including families, schools, the media, and other community institutions. Policies and programs to improve educational opportunities and academic success, youth service programs that concentrate on the transition

from school to work, and a stable financial base for adolescents and their families, are also urgently needed. Much like a feedback loop, policy often shapes attitudes and behaviors, and in turn attitudes and behaviors shape policy. If pregnancy prevention programs are to result in their intended outcomes, policies and funding that support the social context of adolescent life, and that provide access to medically accurate information and health services on an as-needed basis, must also be given highest priority.

V. Putting It All Together

Incorporating Theory-Based Factors into Adolescent Pregnancy Prevention Programs

Program planners know that the results of a needs and assets assessment often determine many of the actual specifics of an intervention (e.g., who receives the intervention, for how long, and what specific strategy will be implemented). Less widely known is that theoretical frameworks can significantly determine both the kind of information gathered through the needs/assets assessment process, as well as in the subsequent planning and evaluation of interventions. Theoretical frameworks can also furnish the necessary conceptual structure, as well as many specific concrete components on which to build and implement an effective pregnancy prevention program that is aimed not only at the individual level, but also recognizes the significance of important individuals with whom adolescents interact, and the broader social environment.

Many different factors are embodied in the 13 theoretical frameworks we have selected as relevant to adolescent pregnancy prevention, each with its own special level of emphasis. A selection of the most common key attributes across these frameworks are delineated in Table 7. It is important to note that self-efficacy, perceived barriers to taking action, and personal perception of consequences are thematically highlighted in each of the theoretical frameworks. Threat appraisal, and perceived support from others that matter, are noted in a subset of theories, while honesty and personal responsibility are found in a smaller subset.

Program planners and direct service providers have a number of components to choose from when creating pregnancy prevention interventions aimed at attitude and behavioral change. Table 8 summarizes theoretically driven factors at the individual level, including knowledge, attitudes, beliefs, values, skills, intent, and motivation. At the interpersonal and social structural levels, the table includes social support, social norms, the availability of programs and services, and opportunities for youth development. Table 8 also lists prominent theory-based program components to consider incorporating

into adolescent pregnancy prevention interventions, including family life/sex education, peer education, mentoring, academic remediation, media, youth groups, case management, family planning services, community service, job training and support, and entrepreneurial development. As we have already discussed, a formula that is comprised of family life knowledge, access to care, and youth development, when implemented within a comprehensive strategy, can be important in successfully combating adolescent pregnancy.

Program planners and direct service providers can include any number of different components in their prevention programs. For example, intervention components such as family life education, family planning services, and programs aimed at improving life options for youth all depend on such personal factors as knowledge, attitudes, beliefs and values, skills, intent, and motivation.

A given message can be delivered by a multitude of different intervention approaches. For example, personal goals and a sense of purpose concerning the future, which are important attitudinal factors for adolescents who want to avoid pregnancy, can be stimulated by means of a number of different interventions or components, including family life education, peer education, mentoring, academic re-mediation, media messages, youth groups, community service, job training and support, and entrepreneurial development. This is important because not all programs will be able to include all intervention components. The important thing is to impart a consistent and reinforced message across and through different program and adolescent pregnancy prevention initiatives. In this way, the message is still transmitted to the adolescent, even though a specific intervention component may be absent from any one program within a given comprehensive model of adolescent pregnancy prevention. By affirming that a broad portfolio of possibilities exists in the community, through which adolescents receive messages concerning abstinence, contraceptive responsibility, and a positive sense of future, planners and providers can offer a better chance of success for at-risk adolescents, even though the pathways to successful outcomes may be different for different segments of the population. Case Study 2 provides an example of theory into practice in a school and community risk-reduction model applied in South Carolina and Kansas.

Although practitioners should consider theory when designing programs, they do not have to be wedded to using one theoretical framework only. The most effective pregnancy prevention program will perhaps consist of providing linkages among individual, interpersonal, and social-structural interventions. One program may not emphasize each on their own, but can create synergies with other community programs.

TABLE 7: Theory-Based Factors to Consider Incorporating into Program Planning By Theoretical Models of Behavioral Change

TABLE 7	MODEL AND/OR THEORY											
THEORETICALLY-DERIVED FACTORS	**Health Belief**	**Attri-bution**	**Reasoned Action**	**Social Learning**	**Protective Motivation**	**Self Regulation**	**Trans-theoretical**	**Relapse Prevention**	**Devel. Assets & Resil.**	**PRECEDE Frame-work**	**Psycho-social**	**Social Ecology**
PERSONAL FACTORS												
KNOWLEDGE:												
Reproductive development												
Menstrual cycle												
Conception												
Consequences of teenage pregnancy for all involved												
Development of relationships				√					√	√		√
Family formation				√					√	√		√
Contraception and reproductive health												
Availability of programs for youth									√	√	√	√
Availability of services for youth									√	√	√	√
Availability of support for youth									√	√	√	√
Availability of opportunities for youth									√	√	√	√
ATTITUDES, BELIEFS, AND VALUES:												
Gender roles and relationships	√		√	√			√		√	√	√	√
Teenage childbearing												
Perceived threat: can get pregnant from unprotected sex												
Personal perceptions of consequences	√	√	√	√	√	√	√	√	√	√	√	√
Personal perceived benefits of abstinence and contraception												
Perceived barriers to talking and maintaining protective action	√		√	√	√	√	√	√	√	√	√	√
Perceived expectations of others that matter about abstinence and contraception			√									
Balance between “here and now” and the future								√		√	√	√
Personal goals and sense of purpose	√			√		√	√	√	√	√	√	√
Optimism about the future	√			√		√	√	√	√	√	√	√
Perception of self-worth (self-esteem)	√			√			√		√	√	√	√
Confidence in own abilities (self-efficacy)	√	√	√	√	√	√	√	√	√	√	√	√
Perceived support from others that matter	√		√	√				√	√	√	√	√
Perceived value, access, and affordability of programs and services	√		√	√					√	√	√	√

Key: **√ = Yes** **Blank Space = No or Not Directly Applicable**

TABLE 7: Theory-Based Factors to Consider Incorporating into Program Planning By Theoretical Models of Behavioral Change

TABLE 7	MODEL AND/OR THEORY											
THEORETICALLY-DERIVED FACTORS	**Health Belief**	**Attri-bution**	**Reasoned Action**	**Social Learning**	**Protective Motivation**	**Self Regulation**	**Trans-theoretical**	**Relapse Prevention**	**Devel. Assets & Resil.**	**PRECEDE Frame-work**	**Psycho-social**	**Social Ecology**
Ability to learn from past mistakes/lessons learned		√	√				√	√		√	√	
INTENT AND MOTIVATION												
Personal power: "control over things that happen to me"	√	√	√	√	√	√	√	√	√		√	√
Achievement motivation	√		√	√	√	√	√	√	√	√	√	√
Self-control: Personal regulation of goal directed behavior or performance	√	√	√	√	√	√	√	√	√	√	√	√
Conviction about one's own ability to take corrective action	√	√		√	√	√	√	√	√		√	√
Internal rewards				√	√		√	√	√	√	√	√
Public recognition of the achievements and progress made by: youth, family, neighborhood, school, and community			√	√			√		√		√	√
Readiness to change or maintain behavior							√	√				
ENVIRONMENTAL FACTORS												
SUPPORT:												
Family: love, safety, communication, involvement, advocacy, clear boundaries established, monitor whereabouts, high expectations, clear rules			√	√			√	√	√	√	√	√
Other adult relationships: positive role models, long-term involvement			√	√				√	√	√	√	√
Neighborhood: safety, caring neighbors, monitoring neighbors' behaviors			√	√				√	√	√	√	√
School: caring, encouraging, safe, clear rules and consequences, high expectations			√	√					√	√		√
Peers: friends model responsible behavior			√	√				√	√	√		√
SOCIAL NORMS:												
Opinions/perceptions of the general public, officials, other leaders, service providers, parents, and peers about:												
1. The value of youth to the community									√	√		√
2. Teenage pregnancies and childbearing												
3. Abstinence before marriage												
4. The completion of schooling												√
5. Use of contraceptives by sexually active youth												

Key: **√ = Yes** **Blank Space = No or Not Directly Applicable**

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THEORETICALLY-DERIVED FACTORS	**Health Belief**	**Attri-bution**	**Reasoned Action**	**Social Learning**	**Protective Motivation**	**Self Regulation**	**Trans-theoretical**	**Relapse Prevention**	**Devel. Assets & Resil.**	**PRECEDE Frame-work**	**Psycho-social**	**Social Ecology**
6. Access to contraceptive education												
7. Access to contraceptive services												
Media coverage and editorials	√			√					√	√		√
Institutionalized norms: policies, laws				√					√	√		√
AVAILABILITY OF PROGRAMS AND SERVICES:												
Family life, abstinence and contraceptive education, counseling, services and supplies												
Mental health												√
Academic assistance to achieve potential												√
Sports/clubs									√			√
Job skills development									√			√
Entrepreneurial skills development									√			√
Mentoring, tutoring and coaching									√			√
Meet real and perceived needs of youth									√		√	√
Perceived quality									√	√	√	√
Youth friendly location(s), times, staff, environment									√	√	√	√
Affordable									√	√	√	√
Physically accessible									√	√	√	√
Culturally attuned									√	√	√	√
Sufficiency: number of youth that can be accommodated in relationship to need									√	√	√	√
OPPORTUNITIES FOR YOUTH DEVELOPMENT:												
Community service starting in elementary school									√			√
Systematic approaches to identifying talent of youth starting in elementary school									√			√
Talent nurturing and development (e.g., arts, sports, academics)									√			√
Peer community: sense of belonging, positive purposes									√	√	√	√
Geographic community: sense of belonging									√	√	√	√
Employment opportunities									√			√

Key: **√ = Yes** **Blank Space = No or Not Directly Applicable**

TABLE 8: Theory-Based Factors to Consider in the Development and Implementation of Adolescent Pregnancy Prevention Interventions

TABLE 8: Factors To Include As Part of Intervention Components	Family Life/ Sex Education	Peer Education	Mentoring	Academic Remediation	Media	Youth Groups	Case Mgt.	Family Planning Service	Community Service	Job Training & Support	Entre-preneurial Dev't.
PERSONAL FACTORS											
KNOWLEDGE:											
Reproductive development	√	√			?			√			
Menstrual cycle	√	√			?			√			
Conception	√	√			√			√			
Consequences of teenage pregnancy for all involved	√	√			√	√		√			
Development of relationships	√	√	√		?	√		√			
Family formation	√	√			√	√		√			
Contraception and reproductive health	√	√			√			√			
Availability of programs for youth	√	√	√	√	√	√	√	√	√	√	√
Availability of services for youth	√	√	√	√	√	√	√	√	√	√	√
Availability of support for youth	√	√	√	√	√	√	√	√	√	√	√
Availability of opportunities for youth	√	√	√	√	√	√	√	√	√	√	√
ATTITUDES, BELIEFS, AND VALUES:											
Gender roles and relationships	√	?	?		√	√		√	√	√	√
Teenage childbearing	√	√	√		√	?	√	√			
Perceived threat: can get pregnant from unprotected sex	√	√	√		√	?		√			
Personal perceptions of consequences	√	√	√		√	?		√		√	
Personal perceived benefits of abstinence and contraception	√	√	√		√	?		√			
Perceived barriers to taking and maintaining protective action	√	√	√		?	√	√	√			
Perceived expectations of others that matter about abstinence and contraception	√	√	√		?	√		√			
Balance between "here and now" and the future	√	√	√		√	√	√	√	√	√	√
Personal goals and sense of purpose	√	√	√	√	√	√		?	√	√	√
Optimism about the future	√	√	√	√	√	√		?	√	√	√
Perception of self-worth (self-esteem)	√	√	√	√	√	√			√	√	√
Confidence in own abilities (self-efficacy)	√	√	√	√	√	√		√	√	√	√
Perceived support from others that matter	√	√	√		√	√		√		√	√
Perceived value, access, and affordability of programs and services	√	√	?		√	√	√	√			
Caring: places high value on helping others	√	√	?		?	√			√	?	?

Key: **√ = Yes** **? = Could Apply** **Blank Space = No or Not Directly Applicable**

TABLE 8: Theory-Based Factors to Consider in the Development and Implementation of Adolescent Pregnancy Prevention Interventions

TABLE 8: Factors To Include As Part of Intervention Components	Family Life/ Sex Education	Peer Education	Mentoring	Academic Remediation	Media	Youth Groups	Case Mgt.	Family Planning Service	Community Service	Job Training & Support	Entre-preneurial Dev't.
Integrity: acts of convictions and stands up for beliefs	√	√	?		?	√				?	?
Honesty: tells the truth even when it is not easy	√	√	?		?	√				?	?
Responsibility: accepts and takes personal responsibility	√	√	?		√	√	√	√	√	√	√
SKILLS:											
Communications and other interpersonal competencies: empathy, sensitivity, friendship skills	√	√	√		√	√	√	√	√	√	√
Cultural competence: comfort with diverse people	√	√			√	√			√	?	?
Threat appraisal	√	√	√		√	√		√			√
Problem solving, planning, and decision making	√	√	√		√	√	√	√		√	√
Negotiation: relationships, abstinence, contraceptive use	√	√	√		√	√		√			?
Resistance	√	√	?		√			√		?	?
Emotional coping responses, including stress management	√	√	√		√	√	√	√		?	?
Studying, learning, and testing			√	√	√	√	√		√	?	√
Entrepreneurial and job skills			?	√	√	?	?		√	√	√
Time management and constructive use of time	√		√	√	√	?	√		√	√	√
Learn from past mistakes/lessons learned	√	√	√	√	?	?	√	√	√	√	√
INTENT AND MOTIVATION:											
Personal power: "control over things that happen to me"	√	√	√	√	√	√		√	√	√	√
Achievement motivation	√	√	√	√	√	√			√	√	√
Self-control: Personal regulation of goal directed behavior or performance	√	√	√	√	√	√	?	√	√	√	√
Conviction about one's own ability to take corrective action	√	√	√	√	√	√		√	√	√	√
Internal rewards	√			√		√		√	√	√	√
Public recognition of the achievements and progress made by: youth, family, neighborhood, school, and community	√	√	?	?	√	√	?		√	?	√
Readiness to change or maintain behavior	√	√									

Key: **√ = Yes** **? = Could Apply** **Blank Space = No or Not Directly Applicable**

TABLE 8: Theory-Based Factors to Consider in the Development and Implementation of Adolescent Pregnancy Prevention Interventions

TABLE 8: Factors To Include As Part of Intervention Components	Family Life/ Sex Education	Peer Education	Mentoring	Academic Remediation	Media	Youth Groups	Case Mgt.	Family Planning Service	Community Service	Job Training & Support	Entre-preneurial Dev't.
ENVIRONMENTAL FACTORS											
SUPPORT:											
Family: love, safety, communication, involvement, advocacy, clear boundaries established, monitor whereabouts, high expectations, clear rules	√				√		√	√			
Other adult relationships: positive role models, long-term involvement			√		√				√	?	?
Neighborhood: safety, caring neighbors, monitoring neighbors' behaviors					√	?			?		
School: caring, encouraging, safe, clear rules and consequences, high expectations		√	?	√	√						
Peers: friends model responsible behavior	√	√			?	√					
SOCIAL NORMS:											
Opinions/perceptions of the general public, officials, other leaders, service providers, parents, and peers about:											
The value of youth to the community					√	√			√	√	
Teenage pregnancies and childbearing	√				√			√			
Abstinence before marriage	√				√			√			
The completion of schooling	?				√			?		?	
Use of contraceptives by sexually active youth	√				√			√			
Access to contraceptive education	√				√			√			
Access to contraceptive services	√				√			√			
Media coverage and editorials					√						
Institutionalized norms: policies, laws					√						
AVAILABILITY OF PROGRAMS AND SERVICES:											
Family life, abstinence and contraceptive education, counseling, services and supplies	√				√		√	√			
Mental health					√		√		?		
Academic assistance to achieve potential			√	√	√		?				
Sports/clubs					√		√				
Job skills development			√		√		√			√	√
Entrepreneurial skills			√							√	√
Mentoring, tutoring, and coaching			√	√		√			√	√	

Key: **√ = Yes** **? = Could Apply** **Blank Space = No or Not Directly Applicable**

TABLE 8: Theory-Based Factors to Consider in the Development and Implementation of Adolescent Pregnancy Prevention Interventions

TABLE 8: Factors To Include As Part of Intervention Components	Family Life/ Sex Education	Peer Education	Mentoring	Academic Remediation	Media	Youth Groups	Case Mgt.	Family Planning Service	Community Service	Job Training & Support	Entre-preneurial Dev't.
Meet real and perceived needs of youth	√				√		√	√	√	√	
Perceived quality					√						
Youth friendly location(s), times, staff, environment		?			√		√	√		√	√
Affordable					?		√	?			
Physically accessible					√		√			√	
Culturally attuned					√		√				
Sufficiency: number of youth that can be accommodated in relationship to need					√		√	√	√	√	
OPPORTUNITIES FOR YOUTH DEVELOPMENT:											
Community service starting in elementary school					√				√		
Systematic approaches to identifying talent of youth starting in elementary school					√						
Talent nurturing and development (e.g., arts, sports, academics)		?	√	√	√						
Peer community: sense of belonging, positive purposes		√			√	√			√		
Geographic community: sense of belonging		√			√	√			√		
Employment opportunities			√	?		?			?	√	√

Key: **√ = Yes** **? = Could Apply** **Blank Space = No or Not Directly Applicable**

Case Study 2: Applying Theory to Programs: The School/Community Sexual Risk Reduction Model

An example of a successful program that has incorporated both a theoretical framework and multi-component school and community-based strategies to reduce adolescent pregnancy was originally developed in South Carolina and replicated in several communities in Kansas.[65] This comprehensive strategy seeks to forge alliances among parents, teachers, the faith community, community leaders, and young people themselves. These alliances are designed to reinforce sexual abstinence, help promote healthy decisions by youth and support access to contraceptives for those adolescents who are sexually active. Key components include the following:

- Provide teachers with graduate level education about sexuality.
- Strengthen age-appropriate, comprehensive, sexuality education in public schools.
- Survey adolescents' sexual behavior.
- Involve the faith community in facilitating communication within families about sexuality issues.
- Implement school- and community-based counseling programs.
- Enhance access to health services for adolescents.
- Engage peer support and education.
- Offer skill development activities as alternatives to early parenthood, including alternative activities for youth provided by schools, religious organizations, and community organizations such as city parks and recreation programs.
- Involve the entire community, including parents, young people, the faith community, businesses, health and community-based organizations, and the media in facilitating social and environmental change to reduce adolescent pregnancies.
- Mobilize the media to increase community awareness and involvement.

The model builds on a set of theoretically-based principles from the Social Learning Theory and Health Belief models. Implicit in this model is a recognition that, in order to be successful, interventions must take into account both the social context of the adolescents' lives, and the development of their own skills and abilities. The intervention is designed to:

- Equip the adolescent with the assertiveness, communication, problem-solving, and decision-making skills needed to resist peer, societal, and cultural pressures to engage in unhealthy behaviors.
- Improve the self-esteem and the future educational and employment opportunities of all young people through the provision of mentoring and job opportunities.
- Enhance the health and lives of children and families by increasing access to a variety of preventive health care services. This includes increasing access to contraceptive services for those adolescents who are sexually active.
- Enhance the knowledge, attitude, and skills of adolescents concerning reproductive health, contraception, and the prevention of pregnancy.

- In coordination with the local school district, implement a continuous and multi-pronged approach for the provision of educational programs directed to all members of the community to enhance their knowledge and communication skills.
- Involve all community members in forging alliances to facilitate social and environmental change to reduce adolescent pregnancies (e.g., establish interagency councils and networking).

A basic premise of this model is that the risk factors associated with adolescent pregnancy are numerous, interrelated, and not easily remedied. The model's hypothesis is that the more changes are made in school and community contexts related to the mission of decreased adolescent childbearing, the greater the likelihood of success. The aim of the model is to facilitate appropriate doses of multiple interventions directed to the general population and higher doses of targeted programs to at risk-risk youths.[65]

A multi-component school- and community-based approach requires the full cooperation and collaboration of the many varied segments that comprise the community. The common denominator is the recognition that a great many factors contribute to early childbearing and other public health problems, that long-term solutions will be achieved only by frankly acknowledging that the problem exists, and that the mobilization of community resources directed at every segment of the local population will be required.

Source: Paine-Andrews, Vincent, Fawcett, Campuzano, Harris, Lewis, Williams, and Fisher, (1996).

VI. Summary

The United States has the highest teenage pregnancy rate of any developed nation.[53] To ensure a more effective response to this challenge, educational efforts (including support for abstinence, as well as access to contraceptive care) and youth development (including a focus on assets messages) could be enhanced by integrating theoretical frameworks aimed at behavioral change. In turn, positive changes in community norms will be more likely to occur. Conversely, focusing on broader community norms can in turn impact individual behavior. Previous interventions have focused primarily on the individual level, and have traditionally been geared to changing the attitudes and increasing the knowledge of adolescents about pregnancy prevention. While changes in attitudes and knowledge are important, they often result in only modest, short-term changes or no behavioral change when they do not also focus on environmental factors (i.e., interpersonal support and social-structural components) and the individual's behavior within that environment.

Expanding our knowledge of what it takes to create behavioral change does require the application of theoretical frameworks as an integral part of adolescent pregnancy prevention interventions. As part of the needs and assets assessment, important modifying variables, as well as funding and policy directives, must also be taken into account. By enhancing the adolescent pregnancy prevention intervention with strong behavioral components, whether the intervention is school-based or implemented within the broader context of the entire community, at-risk adolescents may have a better chance to develop their capacity to set and meet goals, thereby generating the motivation for a greater understanding of and control over their behavior, ultimately leading to behavioral change. Sufficient knowledge and access to services, as well as the enrichment that comes from well-conceived youth development programs, can engender the motivation necessary to delay early childbearing. For maximum effectiveness, prevention strategies need to incorporate the theoretical components which have been shown to be crucial in creating a climate for behavioral change. Finally, the use of a variety of concurrent, theory-driven strategies will help to ensure that adolescents will have the maximum opportunity for success. Community-wide interventions that bring all of these ingredients together will have the best chances for successful outcomes.

The theoretical frameworks, and the psychological, sociological and policy factors we have discussed, have many implications for the development of effective preventive interventions. For optimal behavioral change, interventions that incorporate theories, that respond to high-risk factors, and that address the

policy environment must be combined. When interconnected, they not only have a greater predictive capacity to impact individuals, but they may also lead to the development of interventions with far greater practical power to stimulate and sustain individual behavior change, as well as changes in community norms. Teenage sexual behavior and the incidence of pregnancy and births are determined by multiple influences. Interventions must therefore simultaneously target multiple individual, community, and societal factors. If they are properly balanced and sufficiently comprehensive, combined interventions should produce a greater degree of synergy, thereby increasing the likelihood of an effective impact on adolescent behavior, as well as on the communities in which adolescents mature. Thus, these theory-driven approaches must then be further evaluated to ascertain which interventions work best with which kinds of individuals and population groups, and under what circumstances. Theoretical frameworks, taken together with their modifying psychological and sociological factors, provide professionals with viable choices for designing potentially far more effective interventions and community-wide initiatives.

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