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Review article

Character as a Predictor of Reproductive Health Outcomes for Youth: A Systematic Review

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Abstract To review research examining the influence of character on adolescent sexual and reproductive health (ASRH). We defined character as comprising two positive youth development constructs: prosocial norms and spirituality. We conducted a systematic review of behavioral research published from 1985 through 2007 that examined the association between two character constructs (*prosocial norms* and *spirituality*) and ASRH outcomes. We coded results as showing a protective association, risk association, or no association, and as longitudinal, or cross-sectional. We considered consistent associations from at least two longitudinal studies for a given outcome to be sufficient evidence for a protective or risk association. There is sufficient evidence to indicate that *prosocial norms* and *spirituality* can be protective factors for some ASRH outcomes including intention to have sex, early sex or ever having sex, contraceptive and condom use, frequency of sex, and pregnancy. The generalizability of findings by age, race/ethnicity, and gender was unclear. Findings suggest that some character sub-constructs are associated with a reduced likelihood of several adverse ASRH outcomes and with an increased likelihood of using contraceptives and intending to use condoms. Further research is needed to better understand mixed results and results showing some character sub-constructs, such as religious affiliation, to be associated with adverse ASRH outcomes. Published by Elsevier Inc.

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Youth involved in risky sexual behaviors have increased risk for human immunodeficiency virus infection, sexually transmitted diseases (STDs), and pregnancy [1–3]. Many risk reduction strategies have been developed and implemented to address the rising teen birth rate and the high amount of sexual risk; yet, there has been limited research on alternative strategies such as positive youth development (PYD) approaches. There is some evidence that a PYD approach can be effective for producing long-term behavioral change and ultimately reductions in teen pregnancy and sexually transmitted infections (STIs) among youth [4]. ''Character'' is one of the five categories of developmental outcomes that Pittman et al. identified as being essential to healthy youth development (YD) [5]. In a review of programs that promote PYD, Catalano et al. identified two character constructs that are important to increase PYD: *prosocial norms* and *spirituality* [6]. To date, there has been no research synthesis of the role that these developmental constructs play in youth's sexual and reproductive health. Focusing on constructs developed in Catalano et al.'s earlier PYD program review [6], this review investigates the relationship between both *prosocial norms* and *spirituality* and adolescent sexual and reproductive health (ASRH) outcomes.

Catalano et al. defined programs that fostered prosocial norms as those that ''employed strategies for encouraging youth to develop clear and explicit standards for behavior

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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that minimized health risk and supported prosocial involvement'' [6]. Examples of fostering prosocial norms among youth include providing youth with accurate information about norms of risk behaviors, having youth make public commitments to behave in prosocial ways such as avoiding specific risk behaviors, and having peers and older youth communicate standards for prosocial behavior [7].

Results of a previous review showed spirituality among adolescents to be positively associated with prosocial values and behavior, and negatively associated with premature sexual involvement [8]. However, the review was limited to only sexual activity and virginity status outcomes and not other sexual and reproductive health outcomes. *Spirituality* has been defined as ''relating to, consisting of, or having the nature of spirit: concerned with or affecting the soul; or, from or relating to God; of or belonging to a church or religion'' [9]. Catalano et al. classified programs as fostering *spirituality* if they ''promoted the development of beliefs in a higher power, internal reflection or meditation, or supported youth in exploring a spiritual belief system or sense of spiritual identity, meaning or practice'' [6].

Programs which seek to foster *prosocial norms* and address the development of strengthening of *spirituality* may be able to enhance youth's ability to make healthy decisions regarding sexual behavior. This review examined existing evidence regarding the influence of the character constructs of *prosocial norms* and *spirituality* on ASRH outcomes to identify associations and gaps in the current knowledge base. Given the variability in the extent to which each *character* sub-construct has been studied and the diversity with which each has been operationalized, we chose to conduct a broad, descriptive, inclusionary review to describe the full range of relevant research and to identify promising leads in understudied areas. We propose recommendations for future research and intervention strategies to enhance these sub-constructs within the context of PYD programs.

Methods

We conducted a systematic literature review of research published from 1985 through 2007. Search terms included truncated word stems and variations of Boolean terms (e.g., AND, OR) for *sexual behavior* (e.g., sex, coital, intercourse), *sexual and reproductive health outcomes* (e.g., pregnancy, STIs, human immunodeficiency virus), *adolescence* (e.g. youth, teen, high school), and terms for each YD construct. Search terms for *prosocial norms* included *prosocial norms*, *prosocial beliefs*, and *standards for behavior*. Search terms for the construct, *spirituality*, included *spirituality*, *religion*, *meditation*, *internal reflection*, and *mindfulness*. We searched the following nine databases for relevant studies: PsychINFO (Ovid), the Cumulative Index to Nursing and Allied Health (CINAHL), the Latin American and Caribbean Literature on Health Sciences Database (LILACS), Cochran Reviews, the Education Resources Information Center (ERIC), Sociological Abstracts, Social Services Abstracts, EMBASE, and MEDLINE. In addition, we also searched reference lists of recent review articles.

Abstracts identified by the search were screened for inclusion by review authors (T.M., B.R., K.B., and C.M.) using six criteria as follows. Studies had to (1) examine an association between a character construct (*prosocial norms* or *spirituality*) and a sexual health outcome; (2) have the majority of participants aged ≤ 20 at the time outcomes were assessed; (3) involve a study sample drawn from the general population or youth at risk (incarcerated and parenting teens were included but psychiatric populations were excluded); (4) have been published in a peer-reviewed journal in English; (5) have been conducted in North America, Central America, South America, Europe, Australia, or New Zealand; and (6) have an adequate study design, including a sample size of 100 or more for quantitative studies (100 or more for significant findings and 200 or more for nonsignificant findings), and use of multivariate analyses in the assessment of the association between character constructs and sexual health outcomes. Our sample size requirements were the same as those used in similar reviews to ensure that the studies reviewed had sufficient power for statistical analyses [10]. We then summarized articles that met our inclusion criteria and categorized them according to the character construct and outcomes assessed. We conducted a qualitative assessment of the published data categorized by construct to identify sub-constructs. We then identified and tabulated findings by sub-construct and sexual health outcome. We counted findings if they tested a direct association for a group or subgroup between a construct and an adolescent sexual or reproductive health (ASRH) outcome. We used the commonly accepted level of statistical significance ($p < .05$) to indicate an association or no association. For a more detailed description of the methods used in this review, see the article by House et al in this issue [11].

We classified study findings as ''protective'' if the presence/high score of the character construct was associated with decreased risk, or if the absence/low score of the character construct was associated with increased risk. We classified findings as ''risk'' if the presence/high score of the YD construct was associated with increased risk for an adverse ASRH outcome. We classified findings showing no significant association between a character construct and ASRH outcomes as ''no association.'' Several studies produced multiple findings because they assessed multiple ASRH outcomes, used multiple measures to assess the character construct, or stratified results by sub-groups. In addition, longitudinal studies produced multiple findings because they reported both longitudinal and cross-sectional findings. The main sub-group stratifications of studies in this review were by race/ethnicity, age, and sex. We did not tabulate findings showing only an indirect relationship between a character construct and a sexual health outcome, although we did summarize these findings in the narrative and considered them in our interpretation of the overall body of evidence we evaluated in this investigation. We considered results

Table 1
Sexual health outcome categories for reporting study findings

Category	Outcomes included in the category
Ever had sex	Measures of coital status, abstinence status, sexual experience, and ever engaged in oral, anal, or vaginal sex
Recent sex/current sexual activity	Measures of sex in the past months or current sexual relationships
Early sexual debut	Measures of age of onset and early sexual initiation (based on authors definition)
Use of contraception	Measures of use of hormonal and non-condom contraceptive in the past or present and dual method use
Use of condom	Measures of past or present condom use, unprotected sex in past or present, condom use frequency, safe sex, and refusal of unsafe sex, unless protection/safety is specified as non-condom or dual method
No. sexual partners	Measures of the no. past or present oral, anal, or vaginal sex partners
Frequency of sex	Measures of past or present frequency of oral, anal, or vaginal sex
Sexual risk index	Measures that address multiple sexual health behaviors or outcomes, such as HIV risk behavior or sexual risk taking
Contracted an STI	Measures that used self-reported or clinic-based reports of sexually transmitted infection
Pregnancy/birth	Measures that used self-reported or clinic-based reports of pregnancy, regardless of pregnancy outcome, or birth
Intention	Including measures of intent to have sex, to be abstinent, to use condoms or other birth control, or to achieve any of the behaviors or outcomes listed above

showing indirect effects important because studies using more sophisticated causal models likely tested the effect of potential mediating and moderating factors on the association between a construct and an ASRH outcome. We checked findings to ensure accuracy by having the authors check other authors' final counts on all findings.

We organized findings by ASRH outcome measured. ASRH outcomes included ever had sex, recent sex/current sexual activity, early sexual debut, use of contraception, use of condom, number of sexual partners, frequency of sex, sexual risk indexes, contracted an STI, pregnancy/birth, and intention to either have sex or use a condom (see Table 1 for a detailed description of each outcome).

We developed a standard of evidence for this study that was applied to each group of findings in the review. The standard of evidence in this study is focused on longitudinal rather than cross-sectional research because longitudinal studies eliminate the time order threat to causal interpretation of the relationship between character constructs and ASRH outcomes. We considered findings from two or more longitudinal studies showing a significant association between a character sub-construct and at least one ASRH outcome to be sufficient evidence that the construct was a *protective* or *risk* determinant. When two or more longitudinal studies revealed significant but contradictory findings (both risk and protective), we considered the evidence *mixed* and indicative of no clear association. Although we did not factor ''no association'' findings into the standard of evidence, we did report these findings because they provide important information about the state of research in the field. We described longitudinal and cross-sectional findings for ASRH outcomes that did not meet our standard of evidence to provide a synopsis of the findings and to clarify relationships between sub-constructs and outcomes with mixed results or insufficient evidence. To aid in the interpretation of inconsistent or *mixed* findings, we conducted a follow-up review of bivariate analyses reported in the studies to see whether they may have shown a protective or risk association between a construct and sexual or reproductive health outcome. Bivariate analyses are typically performed to qualify the inclusion of variables in multivariate analysis and may suggest a protective or risk association between a construct and sexual or reproductive health outcome before controlling for other variables. We addressed the generalizability of findings for each construct by examining patterns in those findings by race/ethnicity, age, and sex. Finally, to provide some indication of the quality of each study, we collected information on the reliability and validity of measures used (if provided in the article).

Results

Results are summarized in the following paragraphs for the PYD constructs of prosocial norms and spirituality. An evidence table providing detailed descriptions of each article (e.g., sample characteristics, measures, and findings) is available upon request from the lead author. We summarized longitudinal findings in the text as they relate to our *a priori* standard of evidence. Where we identified some inconsistencies among findings (i.e., some studies found a protective association, whereas others found no association between a specific sub-construct and an ASRH outcome), we examined patterns across studies for possible explanations (e.g., subgroup differences, measurement differences). However, we found few consistent patterns.

Prosocial norms

We identified 131 studies (39 longitudinal and 92 cross sectional) that examined the association between *prosocial norms* (standards that minimize health risks and supported prosocial behavior) and an ASRH outcome. Two longitudinal studies also examined whether *prosocial norms* had an indirect effect.

The measures of *prosocial norms* used by these studies varied, reflecting distinct sub-constructs. Most studies used measures of *prosocial norms* that focused either on *subjective norms* (own attitudes, values, or beliefs) (n = 83) or on their

perceived norms (perceptions of other's attitudes, values, or beliefs) about sex (n = 102), although a few studies examined the effect of *actual norms* (as measured from the perspective of a parent) (n = 8) and its association with the youth's outcomes. Studies addressing *subjective norms* measured either *sex-related* norms (n = 80) or *non–sex-related* norms (n = 3) (e.g., general health values, prosocial activities, and norms regarding several risk behaviors) and we considered each a separate sub-construct in this review. Thirteen longitudinal studies incorporated measures from national surveys such as the National Longitudinal Survey on Adolescent Health (Add Health) [12–22] and the National Survey of Children [23, 24]. Six longitudinal studies used a single item to assess the relationship between *prosocial norms* and ASRH outcomes, whereas 15 used scales and reported on their psychometric properties. Seven studies either did not provide any information on the psychometric properties of scales they used or used previously established measures. Of the 17 longitudinal studies that reported reliability (Cronbach's alpha), the range of scores was .43–.91, with 14 reporting scores >.70.

Table 2 shows studies, the findings of which showed a direct association between *prosocial norms* and ASRH outcomes, stratified by the four *prosocial norms* sub-constructs: *sex-related subjective norms*, *non-sex-related subjective norms*, *perceived norms* of others, and *actual norms* of others. Overall, there is sufficient evidence that *prosocial* norms can be a protective factor with at least two longitudinal studies demonstrating protective associations with seven ASRH outcomes (*ever had sex, early sexual debut, use of contraception, use of condom, frequency of sex, pregnancy, and intentions to have sex or use a condom*). When we examined findings by specific behaviors and subgroups, we found some to be less consistent and some showing a risk association. However, these findings were insufficient to meet our *a priori* standard of evidence requiring consistent findings from *two or more* longitudinal studies. Key findings are summarized in the following paragraphs and in Table 2.

Subjective norms regarding sex were found to be protective of *ever having sex* in 14 findings from nine longitudinal studies [13, 14, 22, 25–30]. From 19 longitudinal studies, five found no association [13, 14, 20, 24, 31]. No risk associations were found. Also no apparent differences were found between studies that found protective versus no association findings in the age, sex, race/ethnicity, or sexual experience of the study population. Longitudinal studies with protective findings used various measures including both perceived positive and negative outcomes of sexual intercourse; however, 10 findings from 3 of the 5 longitudinal studies that had no association findings were more likely to use measures of perceived negative outcomes of sexual intercourse (e.g., if you had sex, it would upset your mother or if you had sex, you would get an STD) [13, 14, 20]. Of the 5 longitudinal studies in which multivariate analyses showed no association, 2 showed a protective association in bivariate analyses [13, 24] and 3 did not report the nature of the bivariate relationship.

Two findings from two longitudinal studies showed *subjective norms regarding sex* to be protective in two findings from two longitudinal studies [12, 55] for the outcome, *use of contraception*. These protective findings were only demonstrated among specific sub-populations, including African American females and 10th–11th grade boys. A total of 16 findings from two longitudinal studies showed no association [12, 24]. One study that showed no association between *subjective norms regarding sex* and *use of contraception* in multivariate analyses did show a protective association in bivariate analyses [24]. Sieving et al. tested the association between four indicators of subjective norms and contraceptive use for seventh to ninth grade and 10th–11th grade boys and girls separately (16 analyses) and observed a protective association only for 10th–11th grade boys [12]. The authors did not report bivariate analyses, and so it is not possible to report whether the relationship was protective or indicated increased risk at the bivariate level. We found no other differences among age, sex, or race to describe the no association findings.

Subjective norms regarding sex were found to be protective of *pregnancy or having given birth* in five longitudinal studies [18, 20, 55, 85, 86], but three longitudinal studies found no association [15, 85, 86]. Jaccard et al. [18] and Dodge and Jaccard [20] found that females who had negative attitudes regarding pregnancy (i.e., ''Getting pregnant at this time in my life is one of the worst things that could happen to me'') were significantly less likely to experience a pregnancy than those that had positive attitudes regarding pregnancy. However, Bruckner et al. [15]. did not find this relationship to be significant. All three longitudinal studies that found no association used Add Health data and we found no apparent differences in the age, gender, race/ethnicity, or sexual experience of the study populations. Zabin et al. found a protective association between attitudes about having a child and births in a sample of African American females, although they did not find a significant relationship between being positive or ambivalent about having a child and pregnancy [55]. Hanson et al. found this relationship between attitudes regarding childbearing and pregnancy to be significant among African American females but not among white females [85]. None of the studies that reported no association in multivariate analyses reported bivariate results.

Table 2 reveals that there is adequate evidence to support the role of *subjective norms regarding sex* as a protective factor when the outcome is *intention to have sex* or *intention to use condoms/contraceptives*. Four findings from two longitudinal studies demonstrate a protective association on *intentions to have sex* [89, 152]. No risk or no association findings were demonstrated in the longitudinal studies.

Subjects' *perceived norms of others* were found to be protective of *ever having sex* in 17 findings from 11 longitudinal studies [17, 19, 22–25, 27, 29, 30, 96, 97], although one risk association was found [17] and six no association findings were found among five longitudinal studies [23, 26, 30, 97, 98]. Jaccard and Dittus found that youth who

Table 2
Distribution of reviewed studies' findings related to the association between prosocial norms and adolescents' sexual behaviors and intentions by sub-construct

Sexual behaviors by sub-construct	Nature of finding/relationship		
	Protective association	Risk association	No association
Subjective norms—sex related (23 longitudinal, 57 cross sectional)			
Ever had sex	14[ab] [13, 14, 22, 25–30] 37[c] [33–47, 184]		19[ab] [13, 14, 20, 24, 31] 19[c] [38, 39, 41, 44, 47–49]
Recent sex/current sexual activity	6[c] [45, 50, 51]		4[c] [16, 45, 52]
Early sexual debut	1[a] [53] 2[c] [54]		1[c] [54]
Use of contraception	2[ab] [12, 55] 6[c] [12, 40, 41, 45, 56]	1[c] [12]	16[ac] [12, 24] 26[c] [12, 34, 40–42, 45, 54, 56]
Use of condom	1[a] [57] 26[c] [41, 56, 58–62, 69–76]	1[c] [58]	19[c] [41, 56, 59–68]
No. sexual partners	8[c] [36, 41, 52, 59, 63]		1[a] [24] 8[c] [41, 52, 59, 77]
Frequency of sex	1[a] [30] 3[c] [50, 54]		1[a] [24] 1[c] [54]
STD	1[c] [78]		1[a] [79] 1[c] [80]
Sexual risk index	2[a] [81] 5[c] [82–84]		1[c] [75]
Pregnancy	5[ab] [18, 20, 55, 85, 86] 2[c] [87, 88]		3[ab] [15, 85, 86]
Intentions	4[ab] [81, 89] 31[c] [36, 51, 57, 61, 63, 71, 73, 77, 89, 91–93]		6[bc] [89, 90]
Sub-total	30[a] 127[c]	0[a] 2[c]	41[a] 86[c]
Subjective norms—non-sex related (3 cross sectional)			
Ever had sex			1[c] [37]
Use of contraception			6[c] [94]
Sexual risk index	4[c] [95]		
Sub-total	0[a] 4[c]	0[a] 0[c]	0[a] 7[c]
Perceived norms (27 longitudinal and 75 cross sectional)			
Ever had sex	17[ab] [17, 19, 22–25, 27, 29, 30, 96, 97] 55[c] [35, 36, 38, 39, 42, 45, 47, 48, 93, 99–117, 184]	1[a] [17]	6[ab] [23, 26, 30, 97, 98] 21[c] [37, 38, 42, 47, 99, 107, 112, 113, 118, 119]
Recent sex/current sexual activity	4[c] [45, 51, 52]		3[c] [45, 52, 120]
Early sexual debut	2[ab] [53, 121] 10[c] [54, 115, 122]		3[a] [121] 1[c] [123]
Use of contraception	6[ab] [12, 17, 24, 124, 125] 3[c] [12, 101]	1[a] [12] 1[c] [110]	20[ab] [12, 17, 19, 124] 31[c] [12, 42, 45, 54, 94, 108]
Use of condom	7[ab] [96, 126, 127] 29[c] [60, 61, 64, 73, 93, 96, 104, 114, 115, 120, 123, 127, 129–135]	1[a] [125] 1[c] [130]	3[ab] [57, 128] 17[c] [39, 60, 61, 63, 65, 76, 127, 130, 135–137]
No. sexual partners	1[a] [24] 3[c] [52, 63, 115]		9[c] [36, 77, 122, 123]
Frequency of sex	2[ab] [24, 30] 7[bc] [54, 101, 123, 138]		1[a] [30] 2[c] [54]
STD	1[a] [139] 3[c] [78]		1[a] [16] 1[c] [140]
Sexual risk index	5[c] [82, 84, 141, 142]		2[c] [131, 141]
Pregnancy/birth	2[ab] [19, 143] 2[bc] [87, 184]		2[a] [17]
Intentions	7[ab] [89, 121, 144] 36[c] [36, 51, 61, 63, 73, 77, 89, 90, 91, 99, 145–148]		7[ab] [89, 121] 12[c] [63, 77, 90, 99, 145, 149]
Sub-total	45[a]	3[a]	43[a]

(*Continued*)

Table 2
Distribution of reviewed studies' findings related to the association between prosocial norms and adolescents' sexual behaviors and intentions by sub-construct (*Continued*)

Sexual behaviors by sub-construct	Nature of finding/relationship		
	Protective association	Risk association	No association
	157[c]	2[c]	99[c]
Actual norms of others (3 longitudinal, 5 cross sectional)			
Ever had sex	1[a] [31]		2[a] [22]
	2[c] [119, 150]		1[c] [36]
Early sexual debut	1[a] [21]		1[a] [21]
			1[c] [123]
Use of condom			2[c] [123, 151]
No. sexual partners	2[c] [123, 151]		1[c] [36]
Frequency of sex	1[c] [151]		1[c] [123]
Intentions	1[c] [36]		1[c] [150]
Sub-total	2[a]	0[a]	3[a]
	6[c]	0[c]	7[c]
TOTAL	77[a]	3[a]	87[a]
	295[c]	4[c]	200[c]

[a] Indicates the studies were longitudinal in design.
[b] Indicates that results met our standard of evidence for an association between prosocial norms and adolescents' sexual behaviors and intentions (i.e., findings from at least two longitudinal studies provided evidence for a protective or risk association).
[c] Indicates the studies were cross-sectional in design.

perceived that their parents approved of birth control were at an increased risk of having sex [17]. However, as noted later in this section, they also found that these youth were more likely to use birth control at most recent sex, suggesting an association between approval of birth control and safe sex. Three studies demonstrated that perceived parental disapproval of sex was associated with a decreased likelihood of ever having had sex [17, 19, 22], whereas two studies found no association between parental disapproval and having had sex [30, 98]. There were no apparent differences by gender, race, or age upon investigation of the no association findings. Of five longitudinal studies that investigated the relationship between perceived sexual activity of peers and sexual intercourse, four found that youth who perceived their peers to be less sexually active were less likely to have sex [23, 24, 27, 96]. Among a sample of rural youth, Whitbeck found no association between perceived sexual activity of peers and sexual intercourse [26]. In addition, of the five studies in which no association findings were reported, bivariate analyses indicated a protective association in four of the five studies [23, 30, 97, 98], whereas one study did not report the nature of the bivariate relationship.

We found adequate evidence to support the role of subject's *perceived norms of others* as a protective factor for *early sexual debut*. Two findings from two longitudinal studies [53, 121] showed a protective association on *early sexual debut* and *three* findings from one longitudinal study indicated no association [121]. Kinsman et al. found no association between *early sex* and three indicators of subjects' *perceived norms of others* (e.g., friends have had sex, early sex is ok, boys lose respect after sex) and a protective association with one indicator (boys gain respect from having sex) in a model including *intention to have sex* as a predictor [121]; however, in a model without *intention to have sex* as a predictor, three indicators of subjects' *perceived norms of others* were protective (e.g., friends have had sex, boys lose respect after sex, boys gain respect from having sex) for *early sex*, and believing early sex was ok had no association. The authors concluded that *intention to have sex* may serve as a mediator in the relationship between *perceived norms* of others and *early sexual debut*.

Youths' *perceived norms of others* were found to be protective in six findings from five longitudinal studies for the outcome, *use of contraception* [12, 17, 24, 124, 125]. However, one study demonstrated a risk relationship among a sub-group of 10th–11th grade girls [12] and 20 findings from four studies indicated no association between youths' perceived norms of others and contraceptive use [12, 17, 19, 124]. There were no apparent differences between studies that found protective versus no association findings in the age, race/ethnicity, or sexual experience of the study population. Of 16 findings of no association, 14 were from a single study that looked at perceived mother's and father's disapproval of sex (separately) and perceived mother's and father's approval of birth control (separately); the sample was divided into four different groups stratified by grade level and sex [12]. Sieving et al. found a protective association among 7th–9th grade girls related to perceived father's approval of birth control, yet a risk association among 10th–11th grade girls related to perceived mother's disapproval of sex [12]. These findings may suggest that the parental norm, disapproval of sex, is not a clear predictor of contraceptive use. In all, nine findings from three studies showed no association between perceived parental disapproval of sex and contraceptive use [12, 17, 19]. None of the studies that reported no association findings reported bivariate results, and so it was not possible to report whether the relationship was protective or increased risk.

Similar to findings for *use of contraception*, youths' *perceived norms of others* were found to be protective in seven findings from three longitudinal studies [96, 126, 127] for the outcome, *use of condoms*, whereas two studies showed no association findings [57, 128] and one study showed a risk association [125]. In one study, perceived mother's approval of birth control was associated with decreased likelihood of wearing a condom in comparison to using a noncondom method (e.g., withdrawal, ''rhythm,'' and over-the-counter contraceptive foams and jellies) [125]. The study also found that perceived mother's approval of birth control was associated with a greater likelihood to use a noncondom method rather than nothing [125]. All protective findings between youths' *perceived norms of others* and *use of condom* were from studies among African American youth, whereas the no association findings were based on mixed race/ethnicity youth. No other differences by gender or age were apparent. Bivariate associations were presented in one of the studies demonstrating no association with condom use, and the associations in this study were protective at the bivariate level [128].

Two findings from two longitudinal studies demonstrated a protective association between subject's *perceived norms of others* and *frequency of sex* [24, 30], whereas one of these studies also reported a no association finding [30]. Martino et al. found a protective association between youths' perceived norms of peers regarding sex and frequency of sex but no association for youths' perceived norms of parents' regarding sex and frequency of sex [30].

Youths' *perceived norms of others* were found to be protective of *pregnancy and/or birth* in two findings from two longitudinal studies [19, 143]. One longitudinal study reported two no association findings [17]. Dittus and Jaccard [19] found a protective association between perceived mothers' disapproval of sex and pregnancy. Using the same study, Jaccard and Dittus [17] found no association between mothers' approval of birth control and pregnancy.

Seven findings from three longitudinal studies [89, 121, 144] demonstrated a protective association of subject's *perceived norms of others* (parents and/or peers) on *intentions to have sex and/or use contraception*, whereas two of these studies also found seven no association findings [89, 121]. There were no apparent differences between the samples of the two studies that demonstrated protective and no association findings [89, 121] with regard to gender or race/ethnicity, although one study with five no association findings was conducted among middle school youth [121]. Bivariate analysis for all no association findings indicated a significant protective association at the bivariate level.

In addition to the direct effects presented in Table 2, we also found indirect effects in two longitudinal studies [81, 144]. Gillmore et al. found that general personal attitudes regarding sex and perceived norms of older adults among both males and females indirectly influenced sexual intercourse through intentions to not have sex [144]. In a study by Miller et al. the authors used structural equation modeling and found that abstinence values of males and females were directly associated with decreased sexual intention and sexual behaviors, and also indirectly influenced sexual behaviors through sexual intention [81].

There were too few longitudinal studies to draw conclusions about the relationship between *prosocial norms* and other ASRH outcomes, including *number of sexual partners*, *having an STD*, and *sexual risk index*.

We also considered the generalizability of findings, and whether there was adequate evidence to draw conclusions about the role of *prosocial norms* for additional sub-populations. Findings suggest that *prosocial norms* can be a protective factor for males and females with protective associations between both sub-constructs (*subjective norms* and *perceived norms*) and *ever had sex* in two longitudinal studies with longitudinal findings for male and female subgroups. Among virgins, *prosocial norms* seemed to have a protective effect with three findings from two longitudinal studies indicating an effect of *prosocial norms* on *intentions to have sex* and *never having had sex*. There was insufficient evidence to draw conclusions about generalizability for other ASRH outcomes.

Spirituality

We identified 87studies (36 longitudinal and 51 cross-sectional) that examined the association of *spirituality* and selected ASRH outcomes. Of these, one longitudinal study and two cross sectional studies identified an indirect effect of *spirituality* on the selected outcomes.

The construct of *spirituality* included the sub-constructs of *religiosity* and *affiliation*. Studies that used measures of attendance at religious services, importance of religious beliefs, or similar measures were classified into the *religiosity* sub-construct. Studies that used measures of *affiliation* with specific religious groups were classified into the *affiliation* sub-construct. To be consistent with the PYD construct of spirituality, only studies that compared youth who reported affiliating with a religion to youth who reported no affiliation (i.e., participants respond ''none'' to questions asking for religious affiliation) were included. Measures or analyses which compared affiliation with certain religions (e.g., catholic fundamentalist) to ''other'' affiliations were excluded. An examination of studies which included statistical comparisons of particular affiliations to other affiliations or an ''other'' category including some affiliations indicated some evidence of protection and risk for some ASRH outcomes; however, religious categories varied from study to study and there were no comparisons to youth with no affiliation. Thus, we focus here on spirituality, not any particular congregation.

Most studies used one or a combination of the following measures to assess *spirituality*: attendance at religious services, importance of religious beliefs to the participants, religious affiliation, or being raised with religion. Most often some or all of these topics were used to create an additive index for religiosity. However, the manner in which they were measured varied by response categories, level of detail

for affiliations, and wording of items. Beyond these more common measures, seven studies examined attendance at religious services at age 14 or during childhood and only two studies measured *spirituality* in a manner beyond organized religion (e.g., spiritual interconnectedness). One study did not provide enough information about items used to assess the measure. Eleven studies provided information about the scales used; among those providing evidence of reliability, Cronbach alphas ranged from .66–.90; 10 of 12 scales had reliability of >.70.

Table 3 shows the findings of direct association between ASRH outcomes and spirituality stratified by *religiosity* and *affiliation*. Overall, there was sufficient evidence that *spirituality* can be a protective factor, with at least two findings from two longitudinal studies demonstrating a protective association with three ASRH outcomes (*ever had sex*, *early sexual debut*, and *frequency of sex*). We found protective outcomes only among studies using the *religiosity* subconstruct. When findings are examined by sub-construct and specific outcomes, the results are not uniform. Key findings are presented in the following paragraphs.

We found *religiosity* to be protective of *ever had sex* in nine findings from six longitudinal studies [22, 30, 153–156]; however, six findings from five longitudinal studies found no association [22, 31, 153, 157, 158]. Two studies found conflicting results (protective vs. no association) by gender or measurement [22, 153]. Meier found subject's religiosity to be protective for girls but found no association for boys [22]. Adamczyk and Felson not only found subject's and friend's *private* religious beliefs to be protective of subject's *ever having sex*, but also found subject's *public* religious beliefs to have no association [153]. With the exception of the gender difference observed in Meier's study, we found no other apparent differences by age, gender, or race/ethnicity between protective and no association findings. In two studies reporting no association findings, bivariate analyses indicated a protective association.

Religiosity was found to be protective of *early sexual debut* in 23 findings from 11 longitudinal studies [13, 24, 32, 98, 180–186]. However, 18 findings from eight longitudinal studies found no association [23, 32, 33, 158, 180, 181, 183, 187]. One study found conflicting results (risk enhancing vs. no association) [33]. In this study, greater church attendance was associated with an increased likelihood of sexual debut for males who anticipated initiating sex (anticipators), whereas for males who did not anticipate initiating sex (delayers) church attendance was not associated with sexual debut at the multivariate level but was protective in bivariate analysis. In three studies, racial differences helped to explain the conflicting results (protective vs. no association) [32, 183, 185]. For example Bearman and Bruckner [183] and Haurin and Mott [185] found that for white youth, religiosity was protective, but for black youth there was no association. In three other studies, gender differences appear to explain the conflicting results (protective vs. no association) [32, 180, 181]. For example, Day found a protective association between religion and *early sexual debut* for girls but no association for boys [32]. In the same study, age helped to explain the conflicting results [32] in that religiosity had a protective association for younger youth and no association for older youth. Two other longitudinal studies reported six no association findings [158, 187] between religiosity and early sexual debut; neither reported the bivariate relationship.

Religiosity was found to be protective *of pregnancy* in five findings from two longitudinal studies [203, 204] and 19 findings from seven longitudinal studies found no association [15, 85, 184, 187, 203, 205, 206]. Manlove found a protective effect for pregnancy among black youth who attend catholic or independent schools; however, there was no association among white and Hispanic youth [203]. There were no notable differences overall or by gender, race, or age between studies that found a protective association and those that found no association.

There were too few longitudinal studies to draw conclusions about the relationship between *religiosity* and other ASRH outcomes, including *recent sexual activity*, *use of contraception, use of condom, number of sexual partners, frequency of sex, having an STD, sexual risk index*, and *intentions to have sex or use a condom*.

There were only three longitudinal studies that examined associations between religious affiliation and ASRH outcomes (*ever had sex* and *pregnancy/birth*). Each study found no association and other evidence was insufficient to draw conclusions as a risk or protective factor for any ASRH outcome based on our a priori standard of evidence.

There are too few longitudinal studies to draw conclusions about the relationship between the overall construct of *spirituality* and other sexual health outcomes, including *ever had sex* (with *religious affiliation*), *recent sex* (with *religiosity* and *affiliation*), *use of contraception* (with *religiosity* and *affiliation*), *use of condoms* (with *religiosity* and *affiliation*), *number of sexual partners* (with *religiosity* and *affiliation*), *frequency of sex* (with *religiosity* and *affiliation*), *STDs* (with *religiosity* and *affiliation*), *sexual risk index* (with *religiosity* and *affiliation*), *pregnancy* (with *religiosity* and *affiliation*), and *intention to use condom or have sex* (with *religiosity* and *affiliation*).

Considering the generalizability of findings, there was sufficient evidence to support a protective association between the *spirituality* sub-construct *religiosity* and the various ASRH outcomes considered in this review. There was sufficient evidence to support this conclusion among males and females, white and black youth, and high school aged youth for the following outcomes: *ever had sex, pregnancy/birth*, and *early sexual debut*. There was limited examination of these associations among Latino youth and younger-aged youth.

Discussion

This review found sufficient evidence to support a protective association between *prosocial norms* and *spirituality* and

Table 3
Distribution of reviewed studies' findings related to the association between spirituality and adolescents' sexual behaviors and intentions by sub-construct

Sexual behaviors by sub-construct	Nature of finding/relationship		
	Protective association	Risk association	No association
Religiosity (35 longitudinal, 50 cross sectional)			
Ever had sex	9[ab] [22, 30, 153–156] 27[c] [152, 46, 100, 138, 159–173]		6[ab] [22, 31, 153, 157, 158] 12[c] [38, 153, 161, 163, 167, 174, 175]
Recent sex/current	1[a] [176]		3[a] [176]
Sexual activity	14[c] [34, 52, 138, 176–178]		11[c] [34, 52, 178, 179]
Early sexual debut	23[ab] [13, 24, 32, 98, 180-186] 14[c] [122, 155, 188–194]	2[a] [33]	18[ab] [23, 32, 33, 158, 180, 181, 183, 187] 6[c] [123, 155, 162, 193, 195]
Use of contraception	2[a] [196] 4[c] [56, 160, 188, 190]	1[a] [196] 2[c] [197]	9[ab] [15, 24, 124, 125, 158, 196] 13[c] [21, 155, 160, 162, 165, 188, 191, 197–199]
Use of condom	1[a] [200] 1[c] [170]	1[a] [155]	4[a] [155] 9[c] [74, 75, 123, 192]
No. sexual partners	7[c] [34, 52, 122, 159]		1[a] [24] 11[c] [34, 52, 123, 159, 191]
Frequency of sex	2[a] [24] 3[c] [138, 161, 201]		8[c] [123, 161, 168]
STD			2[a] [16]
Sexual risk index			2[c] [75, 202]
Pregnancy	5[ab] [203, 204] 4[c] [160, 190, 191, 207]		19[ab] [15, 85, 184, 187, 203, 205, 206] 5[c] [56, 155, 160, 207]
Intentions	3[c] [92, 161]		2[a] [157] 2[c] [92, 161]
Sub-total	43[a] 77[c]	4[a] 2[c]	64[a] 79[c]
Religious affiliation (three longitudinal and seven cross-sectional)			
Ever had sex	4[c] [153, 169, 208]		1[a] [153] 1[c] [161]
Early sexual debut	2[c] [209]	1[c] [188]	3[a] [187] 2[c] [188]
Use of contraception			2[c] [188, 208]
Use of condom	1[c] [151]		2[c] [208]
No. sexual partners	1[c] [151]		
Frequency of sex			3[c] [151, 161]
Pregnancy/birth			5[a] [187, 210]
Intentions	1[c] [161]		
Sub-total	0[a] 9[c]	0[a] 1[c]	9[a] 10[c]
Total	43[a] 86[c]	4[a] 3[c]	73[a] 89[c]

[a] Indicates the studies were longitudinal in design.
[b] Indicates that results met our standard of evidence for an association between prosocial norms and adolescents' sexual behaviors and intentions (i.e., findings from at least two longitudinal studies provided evidence for a protective or risk association).
[c] Indicates the studies were cross-sectional in design.

ASRH outcomes (see Table 4). We found protective associations between two *prosocial norms* sub-constructs and ASRH outcomes. *Subjective norms related to sex* and *perceived norms of others* were negatively associated with *sexual initiation, pregnancy*, and *intentions to have sex,* and positively associated with *use of contraceptives* and *intentions to use condoms*. *Perceived norms of others* were also associated with reducing *early sexual debut*, increasing *use of condoms*, and decreasing *frequency of sex*. Regarding *spirituality*, the sub-construct of *religiosity* was negatively associated with *sexual initiation* and *pregnancy*. There was insufficient longitudinal evidence to draw conclusions regarding the association between *religious affiliation* and ASRH outcomes.

The evidence to support *prosocial norms* and *spirituality* as protective factors for ASRH outcomes provided limited indication of sub-group difference (see Table 4). Longitudinal findings suggest that *prosocial norms* can be a protective factor for both genders and for white and black youth. Similarly, *spirituality* appears to be protective for both genders and white and black high-school age youth. There is insufficient evidence to generalize our finding for either *prosocial norms* or *spirituality* as protective factors to other races/ethnicities.

Table 4
Summary of key findings for character sub-constructs

Character sub-construct	Findings	
	Sufficient evidence for protective association	Comments on subgroups and measures
Prosocial norms: Subjective norms-sex related	Ever had sex	Protective: measures of attitudes regarding negative health consequences of sex (pregnancy/STD) common in protective associations
	Use of contraception	Protective for African-American Females and 10th- and 11th-grade boys
	Pregnancy/birth	Insufficient evidence to examine sub-group effects
	Intentions (to have sex, to use a condom)	Insufficient evidence to examine sub-group effects
Prosocial norms: perceived norms	Ever had sex	Protective in mixed race/ethnicity samples Insufficient evidence to examine sub-group effects
	Early sexual debut	Insufficient evidence to examine sub-group effects
	Use of contraception	Some evidence of risk (10th- and 11th-grade girls) Measures of parental disapproval of sex found no association
	Use of condom	Protective for African Americans Some evidence of risk
	Frequency of sex	Insufficient evidence to examine sub-group effects
	Pregnancy/birth	Insufficient evidence to examine sub-group effects
	Intentions (to have sex, to use a condom)	Insufficient evidence to examine sub-group effects
Spirituality: public and private religiosity	Ever had sex	Protective for males and females Protective for white and black youth Protective for high school-age youth
	Early sexual debut	Protective for males and females Protective for white and black youth Protective for high school-age youth Some evidence of risk
	Pregnancy/birth	Protective for males and females Protective for white and black youth Protective for high school-age youth

We observed notable differences in specific measures of *prosocial norm* sub-constructs and their association with ASRH outcomes. We found a protective association between *subjective norms related to sex* and ever having had sex and noted that most studies that presented no association findings had used measures of attitudes regarding negative health consequences of sex. Therefore, future studies should continue to explore the different influence of positive or negative views of sexual health outcomes.

We also found a protective association between *perceived norms of others* and increased contraceptive use, but when measured as perceived parental disapproval of sex, one study noted a risk association and several studies found no association with contraceptive use. These findings suggest that parental disapproval of sex may be risky for contraceptive use, although two studies found no relationship. Furthermore, when we examined these findings in the context of other findings including approval and disapproval of sex or birth control, we found evidence of a complex relationship between parental norms regarding sex and condom or contraceptive use. Jaccard and Dittus found perceived parents approval of birth control use to be associated with an increased likelihood of sex (risk association) *and* increased use of birth control at most recent sex (protective association) suggesting an association between approval of birth control and safe sex [17]. Longmore et al. found a risk association for perceived mother's approval of birth control and condom use in comparison to a noncondom method; however, there was a protective association when comparing condom use with a noncondom method [125]. Sieving et al. found a risk association between mother's disapproval of sex and decreased birth control use [12]. It appears that parental approval of sex may increase the likelihood of sex initiation but be protective for condom or other birth control use. By contrast, parental disapproval of sex is protective for initiating sex, but youth who ignore or have sex despite parental disapproval tend not to use condoms. These findings may indicate that there are some negative outcomes of parental disapproval of sex among those who are sexually active and some tendency for parental approval of sex to increase sexual initiation.

Strengths and limitations

Some of the strengths of this review included the broad literature search, specific selection criteria, the use of longitudinal studies to draw conclusions, and identification of discernible sub-constructs. The study included a broad search of nine large databases and scans of articles included in other similar reviews. The selection criteria limited the review to studies with strong research methodology and this review offered a critique of the internal validity of existing research while also addressing external validity. Although this study

included a broad search, some relevant published studies were likely missed. This review also includes sub-constructs for *character*, providing an overview of the diverse ways in which this construct has been operationalized in ASRH research. However, even though these sub-constructs have been studied extensively, the majority of research is cross-sectional and longitudinal studies are more limited. Some limitations are based on the variety of analytical methods used in studies. For example, although sub-group analyses were informative, they also stretched the limits of sample size making it sometimes difficult to discern whether a finding of no association was an artifact of inadequate sample size or the result of no association. Additionally, we required multivariate analyses; yet, there is a potential for variables to mask indirect or mediated effects in multivariate models, particularly those that enter several variables simultaneously. As a result, some of the findings may have been masked.

We did not include the findings of no association in our standard of evidence, yet in several cases the preponderance of findings fell into this category. It is possible that these findings are real, that is, there is no association between the character constructs and ASRH outcomes for some sub-groups of youth. Yet, it is also very possible that many of the no association findings are due to poor measurement, inadequate sample size, or use of multivariate methods that masked indirect effects (this is further suggested by the number of times that associations were significant at the bivariate but not multivariate levels).

Finally, we conducted this review to describe the full range of research on prosocial norms and spirituality as character constructs. The diversity of measures in the studies that met inclusionary criteria precluded meta-analyses. As more studies are conducted and measurement becomes more standardized, we recommend meta-analytic approaches in future studies.

Future directions

Although several longitudinal studies have been conducted, more are needed to resolve mixed findings, to examine the relationships with some ASRH outcomes, and examine the generalizability of findings for different gender and cultural groups. The majority of studies on prosocial norms focused on mixed race/ethnicity samples and more research is needed among Latinos, African American, and Native American youth, as well as other groups. Similarly, there are limited studies of the association between spirituality and ASRH outcomes among Latino, Asian, and younger-aged youth. To better clarify the relationship between *prosocial norms* and *spirituality* and ASRH outcomes, more standardized, valid, and reliable measures should be used to assist with making sense of differences between studies. Many studies used single-item measures and different scales, often without presenting reliability and validity information. Studies should also report both zero order relationships and model the effect of variables in multivariate models. One particular measurement issue is the lack of a discernible pattern among coding for *religious affiliation* across the studies reviewed. One possible way future studies could address this is by both developing studies that include a category for no affiliation and by providing more consistent categorization of affiliations.

In addition to enhancing research on each construct, intervention research is critically important. Given substantial evidence supporting a protective association between both *prosocial norms* and *spirituality* and ASRH, there is further need for intervention research to examine how best to foster both prosocial norms and spiritual growth. Possession of *prosocial norms* may equip youth with the skills necessary to protect them from engaging in sexual risk behaviors. Some activities that may lead youth to choose responsible actions regarding sex and contraception include: (1) identifying personal goals and setting standards for achieving those goals, (2) encouraging youth to make commitments regarding sexual behavior, (3) communicating standards for responsible sexual behavior, and (4) providing youth with information to aid in their decision-making. Involvement in religious activities and commitment to religious beliefs may also provide youth with skills and motivation to reduce their involvement in risky sexual behaviors through similar means.

In a review of PYD programs that promote sexual health, Gavin (this issue) identified 15 programs with positive outcomes and six sought to foster prosocial norms [211]. These YD programs reporting positive ASRH outcomes have targeted *prosocial norms* by educating youth about sexual health using curricula, teaching resistance skills, and building aspirations for the future. Although the systematic review of PYD programs did not find any that promoted sexual and reproductive health that targeted *spirituality*, the findings of this review suggest fostering spirituality may aid programs in promoting positive ASRH outcomes.

Conclusion

In summary, this review indicates that *character* can be a protective factor for ASRH outcomes. PYD programs that seek to foster prosocial norms through sharing information on normative behaviors and which provide a safe and supportive setting for youth to make public commitments to prosocial behavior may have a positive effect on sexual and reproductive health as well as other youth outcomes. Furthermore, PYD programs that support spiritual development and growth through encouraging youth to gain a sense of religiosity may also have a positive effect on ASRH and other youth outcomes. Regarding future research directions, there is a critical need for additional measurement studies to develop valid and reliable measures for all youth sub-groups and to conduct further normative and longitudinal research to examine the influence of *character* across the adolescent years.

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