

The Effects of Parental Monitoring and Communication on Adolescent Substance Use and Risky Sexual Activity: A Systematic Review

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Abstract: *Aim:* The aim of the systematic study was to determine the effect of parenting practices on adolescent risk behaviours such as substance use and sexual risk behaviour.

Method: Quantitative research studies were systematically collected from various databases such as Academic Search Complete, MEDLINE (Pubmed), JSTOR, Project Muse and SAGE for the duration of 2003-2013 which was within the 10 year period of relevant literature to the date of study.

Results: Findings established that parental monitoring and communication prevented drug initiation, delayed alcohol initiation, and sexual debut, increased alcohol refusal efficacy, and decreased delinquent behaviour and risk taking behaviours in high risk adolescents.

Conclusion: This review shows that parental practices play significant protective and promotive roles in managing adolescent risk behaviours.

Keywords: Adolescence, parental communication, parental monitoring, parenting, risky sexual activity, substance abuse.

INTRODUCTION

Adolescence is a period where independence is increased in terms of freedom of choice with healthy decision-making seen as crucial at this point [1]. Independent decision-making is considered as a norm during adolescence but should be facilitated by parental control [2]. During independent decision-making, adolescents also tend to engage in risk-taking behaviour as part of experimentation [3]. Risk-taking behaviour can be defined as behaviour which involves potential negative consequences (loss) but is balanced in some way by perceived positive consequences (gain) [4]. In other words, behaviour will be perceived as less risky if positive consequences outweigh the negative consequences and behaviour will be perceived as very risky if negative consequences outweigh the positive [5]. These risky behaviours can be exemplified by promiscuous sexual behaviour, drug use, alcohol abuse including driving under the influence of alcohol [6]. Furthermore, risk-taking behaviours pose a danger emotionally as well as physically to adolescents owing to alcohol related injuries or unplanned teenage pregnancies [6, 7].

Research suggests that the parent-child relationship is crucial to managing the adolescent [8], furthermore adolescents look to adults for support and control [9]. Parenting practices are often key in the parent-child relationship, especially in terms of sexual activity [1].

Parenting practices are defined as practices that shape the understanding of actions, behaviours and rules that parents exert to regulate the personal and social acts of the child [10]. Parenting practices include parental communication, parental monitoring as well as parental knowledge, which some have argued form part of parental monitoring activities [7, 11]. Positive parenting practices, such as communication and monitoring, are shown to delay risk behaviour in youth not yet exposed to risk behaviour, control the behaviour of youth experienced in risk behaviour, and promotes optimal youth development [12-14].

Table 1. Terms and definitions.

Terms	Definition
Parenting Practices	What parents use within the parent-adolescent relationship. Parenting practices are defined as practices that shape the understanding of actions, behaviours and rules, parents exert to regulate the personal and social acts of the child [10].
Risk behaviours	Behaviours which result in negative outcomes yet are perceived to have positive consequences [4, 5].

THE RELATIONSHIP BETWEEN MONITORING AND COMMUNICATION AND ADOLESCENT RISKY BEHAVIOUR

Parental influences continue to serve an adaptive and protective function for adolescents with lack of emotional warmth and less open communication leading to problem behaviours in adolescents [15, 16]. Parental monitoring is an effective way in which to transmit behavioural norms during

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adolescence, and when not done in a manipulative manner and not imposing on adolescent autonomy, it plays an important role in adolescent self-control which is linked to adjustment and behaviour [17, 18]. Parental control and monitoring is shown to have a more profound effect on girls who receive more parental control/monitoring in comparison to boys [19].

On the contrary Statin & Kerr [20] counter the statement that parental control in fact “controls” adolescent behaviour, as it is not an action that the parent does alone but is dependent on adolescent disclosure. This means that parental monitoring cannot be effective if adolescents view this action as intrusive and may refuse to disclose their daily activities. Fletcher, Steinberg, & Williams-Wheeler [11] later assessed these findings of Statin & Kerr [10] which ultimately state that parental monitoring has little result and is dependent on adolescent disclosure. They found this assertion by Statin & Kerr [20] to be in contradiction with the large body of literature particularly because they disregard the likelihood of adolescents’ spontaneous disclosure of information. This spontaneity in disclosure is linked with parental behaviours more specifically parents exercising warmth and support towards their children which has been shown to enhance parental knowledge of adolescent activities [11]. Thus, due to the varying debates, this study systematically reviewed research which highlighted the importance parenting practices have on adolescents and their risk-taking behaviour particularly the debate around whether the effect was dependant on child disclosure or parenting practices.

METHOD

Data was systematically collected from databases such as Academic Search Complete, MEDLINE (Pubmed), JSTOR, Project Muse and SAGE for the period 2003-2013 which was within the 10 year period of relevant literature to the date of study. Search terms included parental monitoring, parental communication, substance use, alcohol use, risk behaviour and risky sexual behaviour. These search terms fall within the definitions outlined in Table 1. The titles and abstracts of the literature identified for this study were screened by two researchers independently using the inclusion criteria as stated below. The full text articles that were potentially relevant to the systematic study were retrieved and screened by one researcher (JR) with secondary screening done by another researcher (NR) using the same inclusion criteria in order to determine eligibility of the studies for this study.

INCLUSION AND EXCLUSION CRITERIA

Inclusion criteria were i) English publications, ii) full text articles, iii) from 2003-2013, iv) studies about humans only and v) studies must speak to parenting practices and its influence on adolescent risk behaviours. Exclusion of studies was consensus studies, intervention studies or studies using secondary data from intervention studies as well as qualitative studies. This left unfiltered resources (primary sourced articles) such as cohort studies and case controlled studies, as a population of which the sample was to be drawn from. Unfiltered resources are much more than filtered

resources leaving room for a wider pool of research on a particular topic and less limiting.

METHODS OF REVIEW

Initial search was conducted by one researcher which yielded 3253 articles using the search terms in its titles. Titles and abstracts were screened by the same researcher. After duplicate removal in searches 60 titles were screened as eligible out of which 46 abstracts were deemed relevant to the study. The search process, titles, abstracts as well as appraised articles underwent secondary screening by another researcher who acted as first reader.

METHODOLOGICAL QUALITY APPRAISAL

The methodological assessment tool was adapted from a previous study [21] as illustrated in Table 2. The methodological quality was assessed on sampling methods, reliability and validity of measurement tools used, source of data, documented response rate, source of data as well as if the definitions of parenting practices and risky behaviours were defined as well as further explained in the study. After methodological appraisal, only 20 articles were found to meet criteria for inclusion. A flow chart of the inclusion process is presented in Fig. (1).

DATA EXTRACTION

A data extraction sheet was created to identify relevant information such author, date of publication, country, population (sample, age and gender), definition of parental monitoring/communication and risk behavior, prevalent parenting practice and effect of parenting practice on adolescent risk behaviours (Table 3).

RESULTS

Of the selected 60 articles, 20 articles met the criteria to be included in the final review. These results are collated in Table 4.

General Description of the Studies Reviewed

Of the final twenty articles included in the study, thirteen used cross-sectional study designs [22-34] and seven had longitudinal study designs [35-41]. The majority of the studies (12/20) were conducted in the USA [22-26, 29, 31, 33, 34, 38, 40, 41]. The remaining eight studies were conducted in Canada (3/20) [35, 37, 39], two studies in Slovakia [28, 32], one study in Cyprus [36] and one was conducted in Scotland [27]. Both male and female respondents participated in the studies, although the majority consisted of female respondents. However, one study consisted of an equal split in male/female adolescent respondents [38], while another study had only female caregiver respondents [26]. Four of the twenty studies sought a parent-child dyad for the sample [29, 34, 36, 38, 40], all of which were mother-child respondents even though both parents were recruited.

Table 2. The critical appraisal tool.

1	Was the sampling method representative of the population intended to the study?	
	A. Non-probability (purposive, quota, convenience and snowball)	0
	B. Probability sampling (simple random, systematic, stratified, cluster, two/multi stage)	1
2	How was non-response addressed?	
	A. Reasons for non-response described	1
	B. Reasons for non-response not described	0
3	Did the study report any response? (If response rate less than 60%, then "NO")	
	A. No	0
	B. Yes	1
4	Was the measurement tool used valid and reliable?	
	A. Yes	1
	B. No	0
5	What was the source of the data?	
	A. Secondary source: survey not designed specifically for that purpose	0
	B. Primary source	1
6	Do authors include the definition of parenting practices (communication/monitoring)?	
	A. Yes	1
	B. No	0
7	Do authors include the definition of adolescent risk behavior?	
	A. Yes	1
	B. No	0
8	Is parenting practices further explored in the study?	
	A. Yes	1
	B. No	0
9	Is adolescent risky behavior further explored in the study?	
	A. Yes	1
	B. No	0
Scoring method: total score divide by total number of all applicable items		
Grading of the quality assessment checklist for observation (QACO) score		
0-33% Bad	33-66% Satisfactory	67-100% Good

Methodological Appraisal

All eligible articles were appraised prior to final inclusion as illustrated in Table 3. Based on the appraisal process of 46 eligible articles, 20 articles met the desired score range of 67%-100% as per the methodological quality.

Measuring Parenting Practices and Risk Behaviours

Of the studies, nine used survey items as either part of their measuring tool or as the sole basis as their data collection tool [23, 25, 27, 28, 30-34]. Three studies used The Network of Relationship Inventory (NRI) [22, 38, 41], which assessed adolescents' perception of their relationship with their parents/guardians. Amongst these three studies, the NRI was used in varied combination with the Parental

Monitoring Scale [22, 35, 38], Alabama Parenting Questionnaire: Child Form and the Parental Control Scale [41], all instruments aimed at measuring adolescents' perceptions of the level of parental behaviour control or level of parental monitoring knowledge. Additionally Parental knowledge was assessed with the Parental Knowledge Questionnaire [36, 37, 39] as well as the 4 item Caregiving monitoring Measure [29].

Risk behaviour was measured using the Tucker-Lewis Index [24], which assessed parental support, knowledge, closeness and peer drug use. Other tests used were the Alcohol Use Disorders Identification Test (AUDIT) [36], Drug Involvements Scale (DISA) [38], the University of Michigan Composite International Diagnostic Instrument (assesses problematic alcohol use) [40], Eysenck and Eysenck Inventory (assess risk taking) [40] and the Youth Health Risk Behaviour Inventory [29].

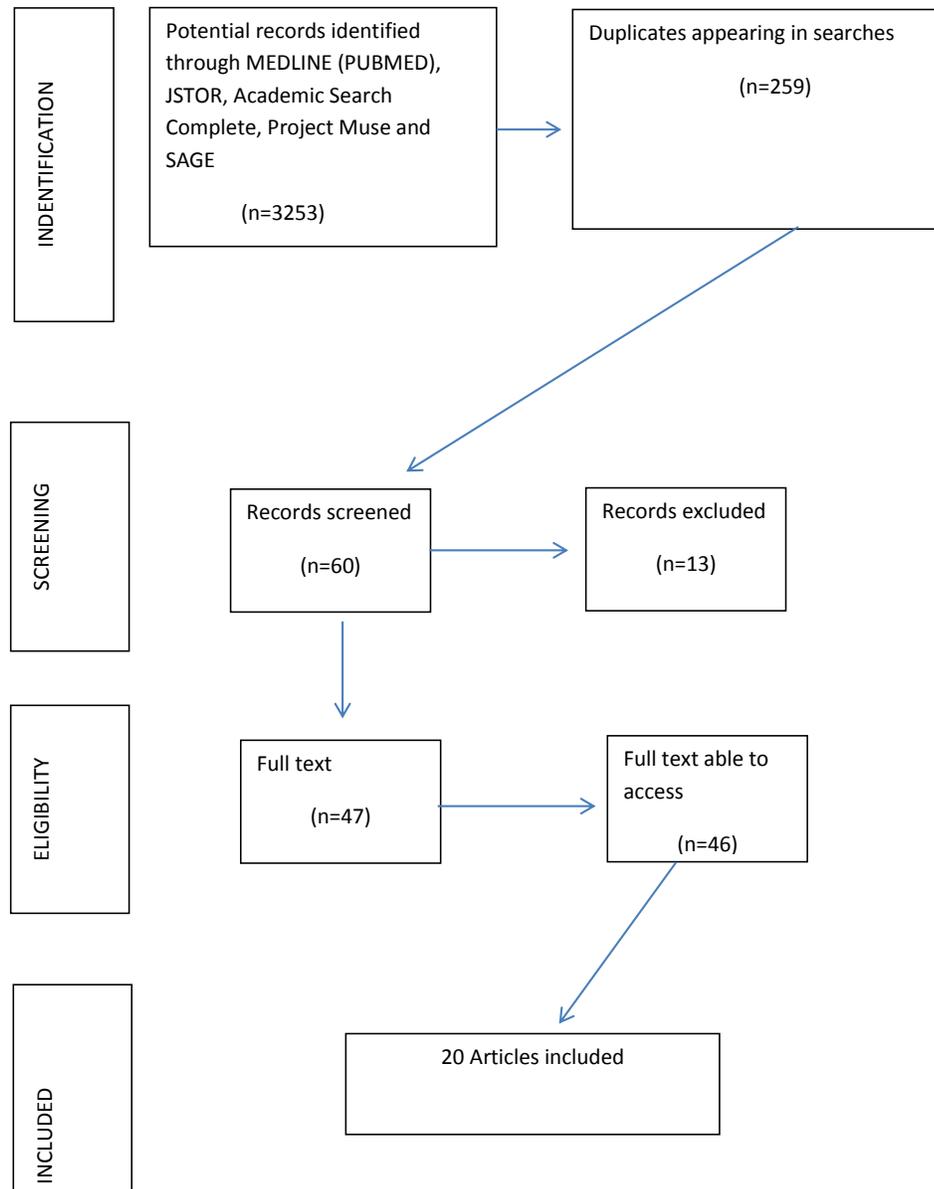


Fig. (1). Screening of articles included.

Defining Parenting Practices

Fifteen of the twenty studies defined parenting practices [22, 23, 28-39, 41]. Parenting practice was also defined as parental monitoring or parental control. Articles also defined parental monitoring as comprising of parental control [35, 38]. Furthermore, two studies highlighted parental communication as a vital aspect of parenting practices highlighting the importance of not only the talking, but the frequency, quality and content of the communication between parent and child [29, 30]. Parenting practice was mainly defined as monitoring, behaviour management (through control such as limit-setting and problem-solving) and fostering influential social cognitions (motivation, values, goals and norms) [22]. In terms of monitoring, this was seen as parental supervision and knowledge about the adolescent’s activities, whereabouts and time spent with peers. Parental control translated to limit-setting, rule setting as well as enforcing acceptable boundaries all in the attempt

to control the adolescent’s behaviour. Only one study explained influential social cognitions in the context of injunctive norms [31]. This was defined as the adolescent’s perception of their behaviour and the anticipated reaction (expectation) of the parent in relation to that behaviour, with the perceived expectation or reaction, acting as a deterrent for adolescents wishing to engage in risk behaviours such as substance use [23].

Defining Adolescent Risk Behaviours

Risk behaviours were clearly defined by only four of the studies [23, 26, 30, 37]. These behaviours were also exemplified as substance use or sexual risk behaviours and explained *via* these examples. Risk-taking behaviour was defined as making choices or partaking in activities which could result in a negative outcome with no guarantee of a

Table 3. Scoring sheet for the critical appraisal.

Authors	1	2	3	4	5	6	7	8	9	Score
Askelson, Campo, & Smith (2012) [42]	1	1	0	1	0	0	0	1	1	33-66%
Aspya, Vesely, Oman, Rodinec, Marshall, McLeroy (2007) [43]	1	0	0	1	0	0	0	1	1	33-66%
Babalola, Tambahe, & Vondrasek (2005) [44]	1	0	0	1	0	0	0	1	1	33-66%
Bahr, Hoffmann, & Yang (2005) [25]	1	0	0	1	1	1	1	1	1	67-100%
Bergh, Hagquist, & Starrin (2011) [45]	1	0	0	0	1	0	1	1	1	33-66%
Bobakova, Kolarcik, Geckova, Klein, Reijneveld, & Van Dijk, (2012) [32]	1	0	1	0	1	0	1	1	1	67-100%
Bohnert, Anthony, & Breslau (2012) [46]	1	0	0	0	1	0	1	1	1	33-66%
Boislard, Poulina, Kiesnerb, & Dishion (2009) [37]	1	0	0	1	0	1	1	1	1	67-100%
Branstetter, & Furman (2013) [38]	1	0	1	1	1	1	1	1	1	67-100%
Browning, Leventhal, & Brooks-Gunn (2005) [47]	1	0	0	1	0	1	0	1	1	33-66%
Byrnes, Miller, Chen, & Grube (2011) [48]	1	0	0	1	0	0	0	1	1	33-66%
Clark, Nguyen, Belgrave, & Tademy (2011) [22]	1	0	1	1	1	0	1	1	1	67-100%
Cleveland, Gibbons, Gerrard, Pomery, & Brody (2005) [40]	1	0	1	1	1	1	1	1	1	67-100%
Cottrell, Li, Harris, D'Alessandri, Atkins, Richardson, & Stanton (2003) [29]	1	0	0	1	1	1	1	1	1	67-100%
Dever, Schulenberg, Dworkin, O'Malley, Kloska, & Bachman (2012) [23]	1	1	1	1	0	1	1	1	1	67-100%
Dick, Viken, Purcell, Kaprio, Pulkkinen, & Rose (2007) [49]	0	0	1	1	0	0	0	1	1	33-66%
Dorius, Bahr, Hoffmann, & Harmon (2004) [24]	1	0	0	1	1	1	0	1	1	67-100%
Fulkerson, Pasch, Perry, & Komro (2008) [34]	1	0	1	1	1	1	1	1	1	67-100%
Gillmore, Chia-Chen Chen, Haas, Kopak, & Robillard, (2011) [50]	1	0	0	1	0	0	1	1	1	33-66%
Barnes, Hoffman, Welte, Farrell & Dintcheff, (2006) [51]	0	0	0	1	1	0	0	1	1	33-66%
Hadley, Hunter, Tolou-Shams, Thompson, Di Cemente, Lescano, Donenberg, & Brown (2011) [26]	1	0	1	1	1	0	1	1	1	67-100%
Harris, Sutherland, & Hutchinson (2013) [52]	0	0	0	1	1	0	0	1	1	33-66%
Jang, Cho, & Yoo (2012) [53]	1	0	0	1	1	0	0	1	1	33-66%
Kalina, Geckova, Klein, Jarcuska, Orosova, Van Dijk, & Reijneveld (2013) [28]	1	1	1	0	1	0	1	1	1	67-100%
Kiesner, Poulin, & Dishion, (2010) [35]	1	0	0	1	1	0	1	1	1	67-100%
Lee (2012) [54]	1	0	0	0	0	0	0	1	1	33-66%
Longest, & Shanahan (2007) [55]	1	0	0	0	0	0	0	1	1	33-66%
Mak, Ho, Thomas, Schooling, McGhee, & Lam (2010) [56]	1	0	0	0	1	1	0	1	1	33-66%
Marsiglia, F.F., Nagoshi, J.L., Parsai, M., & Castro, F.G. (2012) [57]	1	0	0	1	0	1	0	1	1	33-66%
Martins, Storr, Alexandre, & Chilcoat (2008) [58]	1	0	0	0	0	1	0	1	1	33-66%
Mena, Dillon, Mason, & Santisteban (2008) [59]	0	0	0	1	1	0	0	1	1	33-66%
Nagoshi, Marsiglia, Parsai, & Castro (2011) [60]	0	0	0	1	0	0	1	1	1	33-66%
Parkes, Henderson, Wight, & Nixon (2011) [27]	1	0	0	1	1	1	0	1	1	67-100%
Pilgrim, Schulenberg, O'Malley, Bachman, & Johnston (2006) [33]	1	1	1	1	0	0	0	1	1	67-100%
Pokhrel, Unger, Wagner, Ritt-Olson, & Sussman (2008) [61]	0	0	0	1	1	0	1	1	1	33-66%
Poulin, F., & Denault, A. (2012) [39]	1	0	1	1	1	1	1	1	1	67-100%
Schwartz, Unger, Des Rosiers, Huang, Baezconde-Garbanati, Lorenzo-Blanco, Villamara, Sotob, Pattarroyo, & Szapocznik (2012) [62]	1	0	0	1	1	0	0	1	1	33-66%
Somers, & Ali (2011) [63]	1	0	0	1	1	0	0	1	1	33-66%
Springer, Sharma, De Guardado, Nava, & Kelder (2006) [64]	1	0	0	0	1	0	1	0	0	33-66%
Stavrinides, Georgiou, & Dennetriou (2010) [36]	1	1	1	1	1	0	1	1	1	67-100%
Sullivan, Kung, & Farrell (2004) [41]	1	1	1	1	1	0	0	1	1	67-100%
Tharp, & Noonan (2012) [30]	1	0	1	0	1	1	0	1	1	67-100%
Tragesser, Beauvais, Swaim, Edwards, & Oetting, (2007) [65]	1	0	0	1	0	0	0	1	1	33-66%
Voisine, Parsai, Marsiglia, Kulis, & Nieri (2008) [31]	1	0	0	1	1	0	1	1	1	67-100%
Watkins, Howard-Barr, Moore, & Werch (2006) [66]	1	0	0	0	0	0	0	1	1	33-66%
Yu, Clemens, Yang, Li, Stanton, Deveaux, Lunn, Cottrell, & Harris (2006) [67]	1	0	0	1	0	1	0	1	1	33-66%

positive or neutral outcome [23]. In the context of risky sexual activities and substance use, risky behaviours was defined as having unprotected sex, engaging with multiple partners, being sexually active at a young age as well as engaging with substance use in sexual situations [26].

Relating Parenting Practice to Adolescent Risk Behaviour

Overall, the studies indicate parental monitoring and communication. However, within these parenting practices additional practices were found such as parental control and parental knowledge.

Parental monitoring was shown to promote low substance use, with the greatest impact documented on alcohol and marijuana use [22, 40]. Additionally, it decreased the likelihood of drug use initiation and lowered substance use amongst female high risk takers [23]. In terms of sexual risk, parental monitoring was found to lead to sexual risk avoidance in adolescence with less parental monitoring indicating early onset of first sex as well as no condom use in the most recent sexual activity for both boys and girls [27, 28, 37]. Parental monitoring also promoted a decrease in delinquent behaviour [34]. Parental monitoring has a greater effect on females than males [23, 27- 29, 39].

Parental control had similar effects as parental monitoring and was either understood to be part of parental monitoring or having similarities in its definition [28, 30, 35, 38]. Parental control was shown to be more effective in younger adolescents than with older adolescents, as well as having lasting positive effects if exercised in the pre-teen young adolescence phase [22]. Indeed, parental control played a distinctive role in delaying sexual debut when rules were enforced regarding TV content [27].

Parental knowledge was only possible through the child's disclosure of activities and for this reason parental monitoring alone cannot be predictive of adolescent alcohol use [36]. One study illustrates this by showing that that parental monitoring and other parenting factors created an environment which fosters a quality relationship between parent and child and in which there is willing disclosure by the child owing to the quality of the parent-child relationship. Additionally the study states that even if parental monitoring or the parent-child relationship failed to prevent adolescents from engaging in risk behaviour, the parenting factors still served as a protective role as the adolescents would experiment in a responsible manner. This meant that parental monitoring and other parenting practices prevented negative outcomes associated with risk behaviours such as substance use [38].

Parental communication was more predictive of substance use than non-use, especially [30], with one study suggesting it may be that parents initiate conversations about substance use after the adolescent has been caught using the substance [30]. Furthermore, parental communication indicated delayed first sex engagement except when contraceptives were advocated for in these conversations as it was translated into parental permissiveness [27].

The Role of Culture

The majority of studies show that parental monitoring is a deterrent factor in substance use. Despite the prevalence of this finding, one study found that parental permissiveness as well as adolescents' perception of parental expectation for their behaviour, as a result of acculturation, are stronger factors than parental monitoring in predicting substance use amongst immigrant Mexican adolescents. The reason provided was that parents of immigrant Mexican adolescents were challenged to converse in English with friends and parents about the whereabouts of their adolescents [31].

Majority of the studies suggest that in order for parental monitoring to take place, child disclosure was incumbent. However, a study conducted in Slovakia with Roma and non-Roma adolescents, found that parental monitoring was to a certain extent 'a given' in the Roma community due to being a tight knit community being marginalised and isolated [32]. There is therefore a possibility that cultural factors and dynamics could play a role in the processes of monitoring and communication of adolescents and could therefore reduce risky behaviour children.

Mental Health and Parenting Practices

Though parenting practices is shown to reduce or even prevent adolescent risk behaviours, parental mental health has shown to play a role in the effectiveness of the parenting practice. Parental monitoring reduced sexual activity in adolescents with mental health concerns yet maternal caregivers who reported having mental health challenges were prone to show adolescents engaging in recent sex (within 90 days) and provide less parental monitoring. The reason provided for this was that parents might be inconsistent in their attempts to monitor or may withdraw from parental duties due to psychological distress experienced due to their mental health challenges [26].

DISCUSSION

The aim of the systematic study was to determine the effect parenting practices has on adolescent risk behaviours such as substance use and sexual risk behaviour, particularly the effects of parental communication and monitoring. The main findings suggest parental monitoring and communication affects adolescent risk behaviours. These risk behaviours include the prevention of drug initiation, the delay of alcohol initiation, first sex, an increase in alcohol refusal efficacy, decreased delinquent behaviour and in risk-taking behaviours in high risk adolescents. These findings were similar to the findings of a systematic review reviewing parenting factors in relation to adolescent alcohol use [68]. The results of their systematic review found that parental monitoring, parent-child interaction, and child disclosure led to delayed alcohol initiation as well as reduced levels of later drinking [68]. Additional support for the findings of the current systematic review were found in the results of other studies which show that parental monitoring significantly decreases adolescent risk behaviour such as sexual risk behaviours and decreased substance use [26, 56, 60, 67]. Furthermore, parental communication has been found to

Table 4. Data extraction.

Author and Year	Study Design	Population and Sample Size	Country	Measuring Tool for Data Collection	Effect of Parenting Practice	Definition of Parenting Practice	Definition of Risky Behaviour
Clark, Nguyen, Belgrave, & Tademny (2011) [22]	Cohort, cross-sectional design	3 cohorts N= 660, 60% from urban and 40% from rural areas	USA	The Network of Relationship Inventory (NRI) [adolescents' perceptions of their relationship with their parents]; The Parental Control Scale [youth's perceptions of parental behavioural control of everyday activities]; Scales from the centre for Substance Abuse Prevention's Government Performance and Results Act Participant Outcome Measures; The Specific Event Drug and Alcohol Refusal Efficacy Scale.	Parental control= reduced alcohol use; higher rates of drug refusal efficacy. Lower levels of parental control, older adolescents had higher levels of alcohol refusal efficacy than younger adolescents High levels of parental control, younger adolescents had higher levels of alcohol refusal efficacy than older adolescents.	Parental control defined as rules and limit setting on children's behaviours.	Unclear
Dever, Schulenberg, Dworkin, O'Malley, Kloska, & Bachman (2012) [23]	Cross-sectional survey design from 8 sequential cohorts (1999-2006)	N= 36 514 (59% white, 15% African American, 12% Hispanic, 4%Asian, 10%Mixed race/Other), 51% was female.	USA	Risk-taking Tendency; Parental monitoring was measured with three items that asked each adolescent how often their parents knew where they were after school and at night	Parental monitoring had the greatest impact on alcohol and marijuana use. Parental monitoring showed strong promotive factor for low substance use amongst high risk-takers. This finding was strongest amongst females and not males.	Parental monitoring has been seen as a form of intervention for antisocial behaviour in youth.	Risk taking behaviour is making choices or participating in activities that could have a negative consequence and no guarantee of a positive or neutral outcome.
Dorius, Bahr, Hoffman and Harmon (2004) [24]	Multi-stage cross-sectional design	N=4987, median age=15, 51% girls, 72.6% lived with both parents, 13% lived in single parent homes, 11% lived with their mother and 2% lived with their father only. 88% indicated ethnicity as white.	USA	Questions asked on parental support, knowledge, closeness and peer drug use were assessed by the Tucker-Lewis Index (TLI).	In terms of closeness to mother/father, parental support, parental knowledge of activities, perception of being caught was the most sig association to marijuana use when age, gender, parental education, family structure and peer drug use was included in the model.	Not clear	Not Clear
Bahr, Hoffman & Yang (2005) [25]	Cross-sectional survey design	N=4230, 88% white, mean age 15 years, 51% girls	USA	Survey questions on frequency in using alcohol, cigarettes, marijuana and illicit drugs in the past 30 days. Questions on Peer drug use, parental drug attitudes and sibling drug use, how many adults they knew who used drugs as well as attachment to mother/father.	For each unit increase in parental tolerance towards alcohol use, adolescent alcohol use increased by 80%. Parental monitoring decreased illicit drug use by 14%.	Parental monitoring is the extent to which parents watch and supervise their children.	Unclear.

(Table 4) contd.....

Author and Year	Study Design	Population and Sample Size	Country	Measuring Tool for Data Collection	Effect of Parenting Practice	Definition of Parenting Practice	Definition of Risky Behaviour
Hadley, Hunter, Tolou-Shams, Thompson, DiClemente, Lescano, Donenberg & Brown (2011) [26]	Cross-sectional design (Baseline portion of a longitudinal intervention study)	N=790, Only female caregivers.	USA	Parent mental health symptoms (parent report for psychological stress). The Global Severity Index (GSI) [psychological status]; Parental Style Questionnaire [both parents and adolescents reports]; Adolescent reports of sexual behaviour.	Maternal caregiver reporting more mental health problems were more likely to report recent sex (within 90 days) due to less parenting. Parental monitoring reduced of sexual activity among youth with parental mental health affecting this. As the study did not identify mechanism by which parent psychological functioning influences parental monitoring. Yet possibilities included were psychological distress causing parent to withdraw or monitor less as well as practice inconsistent or ineffective monitoring attempts. Adolescent girls more likely to report recent sex activity in relation to males.	Unclear.	Risky sexual behaviours indicated as having been practiced at a young age, engaging in unprotected sex, having multiple partners and substance use in sexual situations.
Parkes, Henderson Wight & Nixon (2011) [27]	Cross-sectional Survey design	1854 students with a mean age of 15.5 years	Scotland	The survey questionnaire asked about sexual risk, sexual relatedness and autonomy, generic parenting practices and sex-focussed parenting.	Supportive parent-teenager relationships and parental values restricting intercourse had the most pervasive positive associations with sexual outcomes. Positive relationship between parenting and relationship relatedness in adolescence. Parental monitoring = risk avoidance. Parenting rules restricting TV content = delay in first sex and anticipating sex but had less pervasive association with sexual outcomes. Ease of communication associated with delayed sex except	Unclear	Unclear

(Table 4) contd.....

Author and Year	Study Design	Population and Sample Size	Country	Measuring Tool for Data Collection	Effect of Parenting Practice	Definition of Parenting Practice	Definition of Risky Behaviour
					in advocacy of contraception which was interpreted as permissiveness. Negative association was frequency of parental control and parental values endorsing contraception with first sex being linked to increased communication around this matter.		
Kalina, Madarasova, Klein, Jarcuska, Orosova, Van Dijk & Reijneveld (2013) [28]	Cross-sectional design	Slovakia	N=1343; 628 Boys, 715 girls, 15 year old students	The questionnaire administered consisted of questions regarding sexual risk behaviour. Parental monitoring was assessed separately for mothers and fathers.	Less parental monitoring and support from both parents = early onset of sexual behaviour among girls. Less monitoring from mothers = early onset of sexual behaviour and not using a condom at last intercourse among boys. Less monitoring by father = early sexual onset by girls and not using condom at last intercourse by boys. Parental monitoring had a greater influence on this age group in monitoring them as it provided fewer opportunities to engage in sex.	Parental monitoring (attention, tracking and structuring context), behaviour management (negotiation, problem solving, limit setting) and influential social cognitions (motivation, values, goals and norms).	Unclear
Cottrell, Li, Harris, D'Alessandri, Atkins, Richardson & Stanton (2003) [29]	Cross-sectional design	USA	270 parent-adolescent dyads, 56% girls; parents were majority mothers. Average age of parents 37.96 years (SD=8.89), Average age of adolescents 13.93 years (SD=1.65). 84% were European American, 14% African American and 1% Latin American.	Parents completed the 4-item Caregiving Monitoring Measure which assessed parents' perceptions of the extent of their knowledge about their adolescents' whereabouts and activities. Adolescents completed the parental monitoring Scale. This assessed adolescent perceptions of their parents monitoring efforts. They also completed the Youth Health Risk Behaviour Inventory which assessed recent risk involvement during the past 6 months. These	With whom adolescents spend their time is unknown to parents. Parental perceptions of monitoring predicted adolescent smoking. Adolescents and parents have the same understanding of monitoring and linked to experience and skills gained through communication. Young parents and mothers report more monitoring than older parents and male counterparts.	Parental monitoring defined as the supervision of youth and communication between parents and youth.	Unclear.

(Table 4) contd.....

Author and Year	Study Design	Population and Sample Size	Country	Measuring Tool for Data Collection	Effect of Parenting Practice	Definition of Parenting Practice	Definition of Risky Behaviour
				behaviours are smoking, cigarettes, drinking, using marijuana, and unprotected sex.	Increased monitoring reported for girls and older adolescents. Adolescent perceptions of monitoring = adolescent drinking, smoking, marijuana use and sexual involvement.		
Tharp & Noonan (2012) [30]	Cross-sectional survey design	Country not clarified	N=1357, 51%boys, 10% of respondents were aged between 9 and 17 and 8.5% were aged 18. 76% of the respondents had parents who were currently married	The Survey asked about demographics, parenting aspects specifically monitoring, closeness and marijuana. Youth styles assessed via youth responses to the attitudes and opinions section. Some of the attitudes assessed were attitudes supporting controlling dating relationships. Substance use was assessed in use of tobacco, alcohol and marijuana	Parental communication on risk behaviour = substance use. Parents more likely to talk to older youth about risk behaviours which is problematic when onset of dating violence and substance use is pre-teen or early teens. Closeness/respect, rules/monitoring = substance non-use or disagreement with attitudes supporting controlling dating relationships which might be due to quality relationships associated to healthy behaviours.	Parental monitoring seen as behaviours that include awareness of children's activities coupled with rules to establish and enforce acceptable boundaries. Parental communication not only described as talking but also content, frequency and quality of what is communicated.	Risk behaviours described as behaviours that place young people at-risk, illness, reduced quality of life and death.
Voisone, Parsai, Marsiglia, Kulis & Nieri (2008) [31]	Cross-sectional design - Secondary analysis	N=729 Mexican American adolescents (51% male, 49% female).	USA	Substance use: reports of use in the past 30 days. Parental monitoring was assessed with survey items.	Parental permissiveness and cultural norms are stronger factors in substance use than parental monitoring. Possibilities include acculturation gap as parents who do not speak English find it difficult to communicate to child/ren's English speaking friends/parents about child/ren's whereabouts	Parental monitoring is defined as the extent to which parents, watch, supervise, and stay aware of their children's activities.	Unclear
Bobakova, Kolarcik, Geckova, Klein, Reijneveld & Van Dijk (2012) [32]	Cross-sectional design	N= 330 Roma (Gypsy) Adolescents (mean age= 14.50, 48.5% boys); 722 Non-Roma adolescents (mean age= 14.86, 53.2% boys).	Slovakia	A Socio-economic indicator was assessed by education level obtained. Drunkenness assessed by asking whether adolescents had been drunk in the past 4 weeks and frequency of drunkenness. Parental monitoring was assessed by asking respondents whether parents knew with whom they are and where they go out.	Culture could play a role in parental monitoring as adolescents report being significantly more monitored by their parents and being significantly less influenced by their best friends than non-Roma adolescents.	Parental monitoring is parents' awareness of an adolescent's activities and whereabouts.	Unclear

(Table 4) contd.....

Author and Year	Study Design	Population and Sample Size	Country	Measuring Tool for Data Collection	Effect of Parenting Practice	Definition of Parenting Practice	Definition of Risky Behaviour
Pilgrim, Schulenberg, O'Malley, Bachman & Johnston (2006) [33]	Cross-sectional survey design (National survey)	Cohorts 1994-1995: 8 th grades - 12715 10 th grades - 13974 Cohort 1996: Combined sample of 8 th and 10 th graders - 13 244 (N=39 933)	USA	Drug use was measured by three items that evaluated frequency of smoking cigarettes, alcohol intake and marijuana use. Parental involvement was assessed in terms of involvement during homework time as well as risk taking and school success.	Parenting negatively predicted adolescent substance use across all age, gender and ethnic groups. Risk taking was predictive of adolescent substance use.	Unclear	Unclear
Fulkerson, Pasch, Perry & Komro (2008) [34]	Cross-sectional design	N= 4 164 students/3 250 parents of students. 70% of sample identified Black/African American or Latino/Hispanic.	USA	Data collected from Parents: Survey items for parental monitoring. Data collected from Children: Survey items for alcohol use and intentions, violent behaviour and delinquent behaviour	Alcohol-related informal social control = parental monitoring Reduced alcohol use and intentions as well as violent and delinquent.	Parental monitoring is a tool of parenting that allows the parent to actively monitor and supervise the behaviour of their child to know more about what the child is doing and with whom.	Unclear
Kiesner, Poulin, & Dishion, (2010) [35]	Longitudinal design	N=285 (of Italian and French Canadian adolescents), 53% girls, Mean Age=14.25 years	Canada	Parenting Monitoring Measure control subscale, Youth Self-Report of substance use as well as substance co-use with friends	Association of substance use and co-use is strongest when the level of parental monitoring rules is low and when street/park is peer context.	Parental monitoring includes control and supervision imposed by the parents.	Unclear
Stavrindes, Georgiou & Demetriou (2010) [36]	Longitudinal design	215 adolescents (Mean age=15.07) and their mothers (mean age=41.7), of Adolescent participants 51% were females and 49% males, 80% adolescents from urban areas and 20% from rural areas. 15% were from low ses, 75% from middle SES and 10% from high SES.	Cyprus	Parental knowledge questionnaire which measured Parental control, Parental solicitation and Child disclosure. Additionally the Alcohol Use Disorders Identification Test (AUDIT) was used to measure adolescent alcohol use.	Child disclosure at time 1 negatively predicted alcohol use at time 2. The findings show that source of knowledge by child willing to disclose, accounts for less alcohol use in adolescents not parents active efforts to gain knowledge through monitoring.	Parental monitoring is parents efforts to find out directly and through own observation how their child behaves.	Unclear.
Boisland, Poulin, Kiesner & Dishion (2009) [37]	Longitudinal design	N=267 Canadian and Italian adolescents of which 55% are Females and 53% are Canadians.	Canada	Self-report questionnaire that measured parental monitoring, parental control, limit setting, friend deviance like friend antisocial behaviour and friend substance use. The Parental Monitoring Questionnaire. Youth problem behaviour was investigated through youth antisocial behaviour and Youth substance use. Youth sexual behaviour was measured through number of sexual partner and frequency of condom use.	Parenting practice = number of sexual partners as adequate parenting practices have an indirect as well as direct effect of adolescent social environments which has a direct effect on their sexual practices. Parents did not influence or have direct impact on condom use. Sex noted as a developmental event with greater probabilities occurring with older adolescents.	Parental monitoring defined as parents efforts to be knowledgeable about child's whereabouts and to structure adolescents unsupervised time with peers. Parental control seen as rule setting.	Risk behaviours seen as diverse manifestations of a risky disposition that is progressively generalised to all aspects of life.

(Table 4) contd.....

Author and Year	Study Design	Population and Sample Size	Country	Measuring Tool for Data Collection	Effect of Parenting Practice	Definition of Parenting Practice	Definition of Risky Behaviour
Branstetter & Furman (2013) [38]	longitudinal study	N=200 10 th grade students (100males, 100females), M age= 15years 10.44months, SD=0.49, 11.5% African American, 12.5% Hispanic, 1.5% Native American, 1%Asian American, 4% Biracial and 69.5% White/ N=197 mother figures participated as parents of the participants.	USA	Drug Involvements Scale (DISA) assessed frequency of use of substances. The Parental Monitoring Scale assessed adolescents' perception of level of parental monitoring knowledge. The Network of Relationships Inventory, Behavioural Systems Version (NRI) asked participants to rate aspects of their relationship with their mother and father as well as with several peers.	When parental monitoring did not prevent adolescents from engaging in risk behaviour, the parental factors still served as a protective factor as adolescents would experiment in a responsible manner. Parental monitoring prevents negative outcomes associated with substance use. Willingness to disclose is direct result of a positive parent-adolescent relationship but has little/moderate effect on neg. consequences of substance use. In addition it did act as predictors for "hard" drug s consequences.	Parental monitoring defined as control and rule setting with parental knowledge of adolescent activities as a result.	Unclear.
Poulin & Denault (2012) [39]	Longitudinal	Canada	N=333 adolescents (60% girls). Ages ranged from 12-19 years. 90 % European Canadian, 3% Haitian Canadian, 3% Middle Eastern Canadian, 2% Asian Canadian and 2% Latino Canadian.	Participants completed Parental knowledge questionnaire. They were also asked to report on friendship network at ages 15-17 of which they were asked to provide gender of friend and if the friend uses alcohol. Indicators for drug and alcohol use were taken from Dishion and Owen's study (2002). Participants were asked the number of times they consumed alcohol or drugs.	Early adolescent parental monitoring = lower levels of late adolescent drug use for both boys and girls. Lower levels of parental knowledge in early adolescence = greater involvement with male friends during mid-adolescence which predicted heavier/problematic alcohol use during late adolescence for both girls and boys.	Parental monitoring defined as keeping track of where the child is, who s/he is spending time with and what s/he is doing when out of the house in order to prevent exposure to risky behaviour in peer contexts.	Unclear
Cleveland, Gibbons, Gerrard, Pomey & Brody (2005) [40]	Longitudinal design	N=714 African American adolescents and their caregivers, Of the primary caregivers 84% were biological mothers, 5% were biological fathers, 6% grandmothers and 5% someone else.	USA	Parents completed the University of Michigan Composite International Diagnostic Instrument to assess substance use. Neighbourhood risk was also assessed on frequency of how often acts of violence occur in the neighbourhood. Risk taking was assessed using Eysenck and Eysenck Inventory (1977). Monitoring, communication and	Parenting strategies that included Parental communication, monitoring, and warmth, effective at reducing contemporaneous measures of susceptibility to use. Adolescents who reported receiving effective parenting had more negative risk images and less susceptibility to use substances themselves.	Unclear	Unclear

(Table 4) contd.....

Author and Year	Study Design	Population and Sample Size	Country	Measuring Tool for Data Collection	Effect of Parenting Practice	Definition of Parenting Practice	Definition of Risky Behaviour
				warmth was assessed for effective parenting. Risk images were assessed with scenarios of people doing risk behaviours and were asked to describe the person using six adjectives. Susceptibility of risk was assessed in asking the participants scenarios of risk and assessed willingness to participate on a 3 point scale.			
Sullivan, Kung & Farrel (2004) [41]	Longitudinal design	N=1 282 children (629 boys, 647 girls). Mean age 11.2. Ethnicity - 51% Caucasian, 31% Hispanic, 17% African American and remainder as Asian, Native American or other.	USA	Drug use initiation was assessed by asking if they had ever used substances such as cigarettes, alcohol and if they have ever been drunk. Witnessing violence was assessed using a six item scale from the children's report of exposure to violence. Parental monitoring: Alabama Parenting Questionnaire: Child Form. Family support assessed using the modified version of the Network of Relationship Inventory.	Witnessing violence = subsequent initiation of substances. Parental monitoring + family support = decreased likelihood of drug use initiation across drug categories and moderated the relation between witnessing violence and initiation of cigarette and advanced alcohol use.	Parental monitoring generally helps ensure that rules are followed and opportunities for involvement in problem behaviours are limited.	Unclear

have the same effect, especially for mother-son dyads and father-daughter dyads [28, 56, 69].

In the current systematic review, the role of culture seems to act as an additional buffer against adolescent risk behaviours when examining the effects of parental monitoring or communication practices. In a sense, culture seems to encourage easier parental monitoring and communication practices [32]. The role of culture in terms of parenting effects is also indicated in other studies [70]. These examples are indicated in studies in relation to adolescents and substance use of Latino and Asian populations [71, 72].

While parenting may pose a challenge when faced with challenging adolescents, the mental health of the parent could be an additional challenge. In the current systematic review, parenting practices were hampered when parents experienced psychological distress and this subsequently results in adolescent risk taking behaviour. The effect of parental mental health can be found in a previous study, which highlighted that parental mental health threatens the adjustment of their children [73].

In terms of the methodological aspects of the studies reviewed, there were two main limitations identified

amongst the studies. The first limitation identified was the clarity of defining the concepts of parental monitoring and communication as well as risk behaviours. In defining parental monitoring, the studies were either specific to one concept, in other words, defining only parental monitoring or parental control (as an indication of parental monitoring), or the concepts were combined with parental control being identified as part of parental monitoring [28, 30, 35, 38]. This lack of clarity in definition poses a challenge when comparing the results of the studies. Additionally, this finding could indicate that there is no universal understanding of parenting practices. The definition of risk behaviours was clearly defined by a general definition in one study [23]. An assumption could be that the context in which the study was conducted (alcohol use, drug use), was self-explanatory of what the study defined as risk behaviours. This in turn could have narrowed down the effects of parenting practices reported on those specific risk behaviours as a broader, more robust definition of risk behaviours, was not provided in most studies. In addition, most of the studies included in this study are from the "global" north though search terms were kept broad and all inclusive in investigating this phenomenon at an international level. Thus

the results of the current review may be indicative of largely western trends. This may be due to searches limited to English articles only or lack of methodological rigor in studies from other areas. These challenges have also been encountered in a previous systematic review investigating parenting practices in relation to adolescent alcohol use [68]. The significance of this study can be seen in the results, which show the pervasive positive effect parenting practices has on adolescent behavior, regardless of context or setting. Currently popular substance use approaches focused largely on harm reduction or education strategies at community level with only youth screened as at risk due to illness or disorder, being the focus of family-centered interventions [74]. Investing in the development of empowered parent-child relationship would be of great benefit in any context or culture. Recommendations for further research would be to explore similar trends in an African setting as only one such study relating parenting practices and risk behaviours had appeared in the searches [44].

CONCLUSION

The aim of this systematic study was to determine the effect parenting practices has on adolescent risk behaviours such as substance use as well as sexual risk behavior. The review shows that parental practices hold international relevance in the attempt to manage adolescent risk behaviours. Yet, it is also evident that a clear definition of both parenting practices as well as risk behaviours are needed, in order to enable significant comparison amongst studies addressing these concepts.

CONFLICT OF INTEREST

The authors confirm that this article content has no conflict of interest.

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