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MASTERTHESIS

Adolescent risk perception and parent-child relationship qualities in relation to early sexual  
debut and sexual risk behavior among adolescents from St. Maarten and the Netherlands

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**Abstract:** Adolescents are at high risk for negative health consequences associated with early sexual debut and sexual risk behavior. Differences in these behaviors across countries have been found. In this 2-wave longitudinal cross-national study, 1st and 3rd year high school students from the Netherlands and St. Maarten filled in a digital questionnaire on these risk behaviors and possible influential factors (risk perception, parental connectedness, and parental monitoring). Adolescents from St. Maarten were more likely to have an early sexual debut and to be involved in sexual risk behavior compared to Dutch youth. Risk perception was concurrently negatively related to sexual risk behavior in both countries, and negatively related to early sexual debut for adolescents from the Netherlands. No relations were found with both parenting qualities and no longitudinal effects were found. Finally, none of the factors accounted for the difference in early sexual debut and sexual risk behavior between the Netherlands and St. Maarten. The discussion includes other potential findings that could explain this contradiction.

**Keywords:** early sexual debut, sexual risk behavior, risk perception, parental qualities, longitudinal cross-national study

**Samenvatting:** Adolescenten lopen groot risico op gezondheidsproblemen door vroeg seksueel debuut of seksueel risicogedrag. Dergelijke gedragingen blijken te verschillen tussen landen. In de huidige 2-wave longitudinale cross-nationale studie vulden 1<sup>e</sup> en 3<sup>e</sup>-jaars middelbare scholieren uit Nederland en St. Maarten een digitale vragenlijst in over deze risicovolle gedragingen en potentiële factoren die deze gedragingen kunnen beïnvloeden (risicoperceptie, ouder-kind verbondenheid en ouderlijke controle). Adolescenten uit St. Maarten bleken vaker een vroeg seksueel debuut te hebben en seksueel risicogedrag te vertonen dan Nederlandse adolescenten. Risicoperceptie was cross-sectioneel negatief gerelateerd aan seksueel risicogedrag voor beide landen en negatief gerelateerd aan vroeg seksueel debuut onder Nederlandse adolescenten. Er werden geen relaties gevonden met beide ouderschapskwaliteiten. Ten slotte verklaarden geen van de factoren het verschil in vroeg seksueel debuut en seksueel risicogedrag tussen adolescenten uit Nederlands en St. Maarten. De discussie bevat andere potentiële bevindingen die deze contradictie kunnen verklaren.

**Sleutelwoorden:** vroeg seksueel debuut, seksueel risicogedrag, risicoperceptie, ouderschapskwaliteiten, longitudinaal cross-nationale studie

Adolescents are at high risk for negative health consequences associated with early sexual debut and sexual risk behavior (Kotchick, Shaffer, Miller, & Forehand, 2001). The earlier the sexual debut takes place, the riskier the sexual behaviors initiated by these adolescents are. Consequently, early sexual debut is associated with negative health outcomes (Kaestle, Halpern, Miller & Ford, 2005). Although adolescents only make up 25% of all sexually active people, they account for the highest percentages of unintended pregnancy and half of registered cases of sexually transmitted infections (Victor & Hariri, 2016). Altogether sexual risk behavior in adolescence and its negative health consequences seems to be a universal problem.

Nevertheless, differences in adolescent sexual risk behavior across regions of the world have been found. Despite former European colonialism in the Caribbean, earlier studies show differences between these regions in adolescent sexual risk behavior (Römer, 1977; Goslinga, 2012). In the Caribbean 32% of the 15-year-olds that have had sexual intercourse debuted on or before reaching the age of 13, while in Europe only 22% did (Currie, et. al., 2009; Halcón, Blum, Beuhring, Pate, Campbell-Forrester, & Venema, 2003; Pilgrim & Blum, 2012). Also, in the Caribbean, only 53% of the adolescents used a condom during their last sexual intercourse while in Europe 80% stated that they used a condom at their most recent sexual intercourse (Halcón, et al., 2003; Ramiro, et al., 2015). Moreover, one out of four Caribbean adolescents have had a sexually transmitted disease before reaching the age of 21, while for Dutch adolescents this number is less than 9 out of 1,000 boys and 13 out of 1,000 girls (De Graaf, Kruijer, Van Acker, & Meijer, 2012; Sector Health CARE Affairs, 2000).

St. Maarten is a country within the Caribbean and a former colony of the Netherlands, a country within West-Europe. This colonial relationship is still visible in St. Maarten due to the West-European elements of its culture, though it is questionable if these resemblances also account for most aspects of human behavior (Römer, 1977; Goslinga, 2012). Particularly,

early sexual debut and adolescent sexual risk behavior. The Caribbean statistics suggest that early sexual debut and adolescent sexual risk behavior should be more common in St. Maarten. Nevertheless, conclusions like these cannot be drawn as former studies focused on broader regions. Moreover, most studies failed to focus on youth in similar age categories. The current study aims to examine the differences in early sexual debut and adolescent sexual risk behavior between adolescents from the countries St. Maarten and the Netherlands and investigate factors that may account for these differences utilizing longitudinal data.

Multiple risk and protective factors ranging from individual, familial to further environmental factors predict the degree of early sexual debut and sexual risk behavior in adolescents (Pilgrim & Blum, 2012). The quantity and content of these predictors vary among adolescents (Bearinger, Sieving, Ferguson, & Sharma, 2007). One important individual factor that influences risk behavior is risk perception. As Bauman and Udry (1981) stated, the choice for every human behavior is explained by the evaluation of risks and positive outcomes of that behavior. Former studies found that adolescent risk perception is related to (sexual) risk behavior, with a lower risk perception often being related to more (sexual) risk behavior (Fishbein, 2003, Halpern-Felsher, Biehl, Kropp, & Rubinstein, 2004; Johnson, McCaul, & Klein, 2002; Reyna & Farley, 2006). Here adolescents are found to minimize the risk assessment of health-threatening activities such as unprotected sexual activity, which may lead to an increased likelihood of being involved in risk behavior (Johnson, et al., 2002). They tend to maximize instant pleasure and qualify risk behaviors with consequences for health as rational (Reyna, & Farley, 2006). Nevertheless, some studies also found higher risk perception to be positively related to (sexual) risk behavior. This means that the higher adolescents perceive the risk of certain behaviors, the bigger the chance they get involved within (sexual) risk behavior (Kotchick, et al., 2001; Mills, Reyna, & Estrada, 2008). Due to the inconsistent results, which often are obtained from concurrent studies, it cannot be

determined with certainty that risk perception is being a predictor of early sexual debut and sexual risk behavior.

Cross-national differences also influence the importance of certain risk and protective factors through government policies and general social values (Petraitis, Flay & Miller, 1995). Family is known as one of the most important factors that predicts early sexual debut and sexual risk behavior among adolescents (Kincaid, Jones, Starrett, & McKee, 2012). It is a multidimensional construct with several psychological and social factors (DiClemente, et al., 2001). An important difference between St. Maarten and the Netherlands is the working environment. In St. Maarten tourism is known as the main industry while in the Netherlands most people work in health care and business services (Philip & Troost, 2012; Centraal Bureau voor de Statistiek, 2017). It is reasonable to think that due to the late working hours in the tourism sector, it is harder for parents in St. Maarten to have contact on a regularly basis with their children. In the current study we focus on two salient factors, namely parental connectedness and parental monitoring. These are found to be important protective factors for both early sexual debut and sexual risk behavior (Lenciauskiene & Zaborskis, 2008; Pilgrim & Blum, 2012).

Catalano, Berglund, Ryan, Lonczak & Hawkins (2004) described family connectedness as “The emotional attachment and commitment a child makes to social relationships in family” (p. 102). It is one of the most important concepts for a positive development (Catalano, et al., 2002; Pittman, Irby, Tolman, Yohalem & Ferber, 2011). A recent systematic review by Markham et al. (2010) showed, by analyzing ninety studies, that there is strong evidence that family connectedness is a protective factor for sexual risk behavior in adolescents. Here sexual risk behavior consisted of four aspects: ever having sex, early sexual debut, frequency of sex and pregnancy/birth. Several interpretations are created to explain the positive effect of family connectedness on early sexual debut and sexual risk

behavior in adolescents. An example of a plausible explanation is that feeling connected as an adolescent towards your parents influences the will to meet the expectations of the parents positively. As most parents would like their children to make safe decisions considering sexual intercourse and not to have sex at a younger age, a good family connectedness should result in this type of behavior (De Graaf, Vanwesenbeeck, Woertman & Meeus, 2009).

Parental monitoring can be described as the parents' knowledge about their children's whereabouts, friendships and activities (Ying, et al., 2015). Less parental monitoring is related to more sexually transmitted diseases among adolescents (DiClemente, et al., 2001). Moreover, according to Miller (2002) parental monitoring has a positive influence on the sexual debut age and lowering the number of sexual partners. It also seems to lower the risk of teen pregnancy indirectly by preventing teens from using alcohol, drugs, and associating with high-risk peers. By preventing adolescents from being exposed to these risk factors, parents decrease the chance that their children choose to have unprotected sexual intercourse (Miller, 2002). One plausible explanation for this connection is that through monitoring, parents have more knowledge of their children's activities and whereabouts which enables them to better adjust and intervene in their children's lives in time when noticing that their children are moving towards a wrong direction (De Graaf, et al., 2009). However, parental monitoring seems to work in a counterproductive manner when parents are overly controlling (Barber, 1996; Gray & Steinberg, 1999). Most research in this area has been concurrent, and therefore it cannot be determined with certainty that parental monitoring predicted or even preceded early sexual debut and sexual risk behavior. The relation between these factors namely also seems reasonable when reversed: early sexual debut and sexual risk behavior might predict parental monitoring due to parental concerns about these behaviors.

For both parental connectedness and parental monitoring multiple studies have shown that these are evident protective factors for early sexual debut and sexual risk behavior during

adolescence. Still, most studies that focus on these factors fail to investigate multiple risk factors across individual and familial domains. This obscures whether there is overlap across these domains or whether each makes an individual contribution to the decrease in early sexual debut and sexual risk behavior throughout adolescence.

### **Current study**

This 2-wave cross-national longitudinal study aims to answer four research questions. The first question is: Is there a difference in early sexual debut and sexual risk behavior between adolescents from the Netherlands and St. Maarten? Considering the above named statistics about these behaviors in both countries or regions, it is expected to also find earlier sexual debut and more sexual risk behavior among St. Maarten adolescents compared to adolescents living in the Netherlands. There are no studies that have compared these countries directly. In the current study we investigated 1<sup>st</sup> and 3<sup>rd</sup> year high school adolescents from both countries.

The second question is: Is there a predictive relation between adolescent risk perception and early sexual debut and/or adolescent sexual risk behavior? As in most studies a negative relation was found between these factors, this will also be the expectation within this study. As most studies on this relation has been concurrent and have shown inconsistent results, this 2-wave longitudinal study could make a major contribution to the current knowledge on risk perception as a predictor of early sexual debut and sexual risk behavior.

The third research question focuses on parent-adolescent relationship qualities: Is there a predictive relation between parental connectedness and parental monitoring and early sexual debut and adolescent sexual risk behavior? Considering the described literature on these parental qualities, it seems most plausible to expect a protective relation with both early sexual debut and sexual risk behavior. As most studies on parental monitoring are concurrent,

this longitudinal study could contribute relevant new information to the current knowledge about this factor. Furthermore, former literature on early sexual debut and sexual risk behavior lacks studies that focus on the cumulative contribution of multiple factors, while in this study three were included.

Finally, this study examines a fourth research question: Do adolescent risk perception, parental connectedness and parental monitoring account for the possible differences in early sexual debut and sexual risk behavior between adolescents from the Netherlands and St. Maarten? As no former research has been executed on the differences in risk perception on early sexual debut and sexual risk behavior across countries, this study will have an exploratory point of view on this factor. As for parental qualities, it is plausible to think that due to the late working hours in the tourism sector, it is more difficult for some parents in St. Maarten to develop a strong connectedness and/or to monitor their children's behavior to the same degree as Dutch parents are able to. For that reason it is expected that parental qualities account for the differences in early sexual debut and sexual risk behavior between adolescents from the Netherlands and St. Maarten. Given the dangers of early sexual debut and sexual risk behavior, it is important to identify and examine risk and protective factors by comparing these for St. Maarten and the Netherlands. In that way one is able to find out how to influence or even prevent early sexual debut and sexual risk behavior in adolescents in these countries. Consequently, risky actions of this form of behavior could be lowered (Price & Hyde, 2008).

## Method

### Participants

Data of this study are drawn from the Adolescent Risk Taking (ART) project (Defoe, 2016). The ART project is a 3-wave longitudinal study of 1st and 3rd year Dutch high school students followed 3 times in the fall of their school year (2012 – 2013 – 2014) with almost the same measures collected each year. All were in their first or third year of “preparatory middle-level applied education” or “higher general continued education”. A similar 2-wave longitudinal study was conducted in St. Maarten. As both countries are included, the current study focuses on data collected in the first two waves of the project.

In the Netherlands, wave 1 consisted of 602 adolescents with 322 males (53.50%) and 280 females (46.50%) with a mean age of 13.50 years ( $SD = 1.23$ ). Wave 2 was conducted one year later and consisted of 582 adolescents with 318 males (54.60%) and 264 females (45.40%). At baseline, 93.20% of the adolescents of the Dutch sample were born in the Netherlands. Most of them (61.60%) identified themselves as Dutch and the remaining group (38.40%) identified themselves with other ethnic minorities, such as Turkish (9.30%), Surinamese (7.40%), Moroccan (5.50%), Caribbean (1.10%) and other (15.10%). Over one-third of the participants (40.30%) followed higher general continued education. Most participants (59.20%) were educated on a lower level, and only 0.50% was educated higher than the higher general continued education level. Concerning the parental marital status of the participants, 57.40% were married, 3.90% were divorced, 13.20% were living together, and the remaining 25.50% was categorized otherwise.

In St. Maarten wave 1 consisted of 350 adolescents with 165 males (47.10%) and 185 females (52.90%), with a mean age of 14.19 years old ( $SD = 1.67$ ). Also in St. Maarten, data from wave 2 was collected one year later and consisted of 282 adolescents with 113 males (40.20%) and 169 females (59.80%). Most participants (79.80%) were born in St. Maarten.

Most of them (68.20%) identified themselves as a St. Maartener. The remaining group of participants identified themselves as Caribbean (20.20%), Dutch (6.50%) or other (5.10%). In terms of education level, 12.60 % followed higher general continued education. Most participants (77.70%) were educated on a lower level, while only a small group (9.70%) was educated higher or in a different level. Finally, most participants had married parents (40.90%). Nevertheless, the second largest group of participants had divorced parents (30.00%). A percentage of 8.90% of the participants had parents that lived together, and the remaining 20.20% was categorized otherwise.

For the present study adolescents from the Netherlands and adolescents from St. Maarten who had data at both measurement points are included in the analyses. These adolescents who participated in both waves did not differ. Bias checks comparing adolescents who were not present at wave 2 to adolescents who were present at both waves, revealed that those who dropped out were more likely to be older, more likely to be from St. Maarten, and reported lower parental connectedness. No differences were found on whether the adolescent had sex or not, age at first intercourse, sexual risk behaviors, risk perception, parental monitoring and gender. This should be taken into account when interpreting the results.

## **Procedure**

For the Dutch sample participants were recruited from high-schools in six different regions in the Netherlands. These schools were approached by e-mail and telephone. In total eight high-schools agreed to participate. The parents of the potential participants received an information letter about the project and dissent letters. With these dissent letters parents were able to refuse the participation of their child.

For the St. Maarten sample participants were recruited from the 2 high-schools that used a Dutch-education curriculum. Both schools agreed to participate. The procedure for recruiting schools and participants was the same as for the Dutch sample.

During the data-collection in both countries, trained research assistants gave both verbal and written instructions to the participants. For the data that has been used in this study, participants filled in a digital questionnaire during regular school hours which took about 45 to 60 minutes to complete. As a reward, Dutch participants were able to choose between a chocolate candy worth 2 euros or join a raffle with a chance to win a 50 euro gift voucher. For the adolescents from St. Maarten, lunch vouchers and movie tickets were raffled among the participants.

## Measures

*Early sexual debut* was measured by 1 item of the CARE questionnaire (Fromme, et al., 1997) given at wave 2: *How old were you when you had sex for the first time?* in which adolescents reported the specific age in years. Only wave 2 was included as more adolescents debuted by that time. Early sexual debut was interpreted as having sexual intercourse for the first time at the age of 13 or younger and was coded as 1. Adolescents who either debuted later or were 14 and older but not had sexual intercourse were coded as 0. As early sexual debut is a single item measure, no reliability was calculated for this scale.

*Sexual risk behavior* was measured by 4 items of the Cognitive Appraisal of Risky Events (CARE) questionnaire (Fromme, Katz, & Rivet, 1997) at wave 1 and 2. Items were on the topics condom use, contraception use, having sexual intercourse with someone you just met and having sexual intercourse with multiple individuals. An example item: *Did you ever have sex with someone you just met (and barely know)?* Answer categories ranged from 0 = *never* to 4 = *always*. Mean scores were computed from the standardized items, with higher

scores indicating more sexual risk behavior. Concerning the reliability of this scale, Cronbach's alpha for the whole sample in wave 1 was  $\alpha = .44$ , indicating poor reliability. Cronbach's alpha for wave 2 was  $\alpha = .89$ , indicating good reliability.

*Risk perception* on sexual risk behavior was measured using 6 items adapted from the CARE questionnaire (Fromme, et al., 1997) at wave 1. These items asked participants to rate the risks (3 items) and benefits (3 items) of several sexual risk behaviors. An example item in which risk is rated is: *How risky is having sex without a condom with someone who is not your permanent partner?* On all 3 risk items participants were able to answer from 1 = *Not risky at all* to 7 = *Extremely risky*. An example item in which benefit is rated is: *How beneficial is having sex with someone you just met, or with someone you do not know very well?* On all 3 benefit items participants were able to answer from 1 = *Not beneficial at all* to 7 = *Extremely beneficial*. Cronbach's alpha for the whole sample on the risk items was  $\alpha = .91$  and on the benefit items  $\alpha = .85$ , both indicating good reliability. To calculate the score of risk perception, the score on benefits was subtracted of the score of risk items. This means that a higher score on this scale shows that the adolescent interprets the risk behavior as less beneficial and more risky.

*Parental connectedness* was measured by 5 items of the Network of relationships inventory questionnaire for both mothers and fathers (Furman, & Buhrmester, 1985) at wave 1. Participants were asked to answer these items for both mother and father, which means that the adolescents answered 10 items in total. These items focused on the way and intensity parent and child support each other. An example item: *How often does your mother support the things you do?* On all items answer categories ranged from 1 = *little to never*, to 5 = *it could not be more*. Concerning the reliability of this scale, Cronbach's alpha for the whole sample was  $\alpha = .87$  for mothers and  $\alpha = .85$  for fathers, indicating good reliability. A parental

connectedness score was calculated by taking the mean of the responses across mothers and fathers.

*Parental monitoring* was measured by 6 items of the Parenting practices questionnaire (Kerr, & Stattin, 2000) at wave 1. The items focused on parents' knowledge about their children's whereabouts, friendships and activities. An example of an item: *Does at least one parent know where you are going to after school?* On this item participants are able to answer from 1 = *never* to 5 = *(almost) always*. A good reliability was found on this scale with a Cronbach's alpha of  $\alpha = .83$ .

### **Strategy of analyses**

The software 'IBM SPSS Statistics 22' and 'IBM SPSS Statistics 24' were used for the analyses. In order to assess the difference in early sexual debut between adolescents from the Netherlands and St. Maarten, a chi-square analysis was conducted. For the same question on sexual risk behavior a repeated measures ANOVA was conducted. In both analyses age was used as a covariate.

Secondly, to examine whether risk perception, parental connectedness and parental monitoring (all wave 1) predict early sexual debut (wave 2), a logistic regression was executed. Before performing this analysis, variables were centered. On the first step of the regression the age and country of the adolescents were entered as a control variable; on the second step the predictors were entered; on the third step three interaction effects were entered separately. These were on country  $\times$  risk perception, country  $\times$  parental connectedness, and country  $\times$  parental monitoring (all wave 1). Significant interactions would indicate that the specific predictor was relevant in one country but not the other. In order to examine the concurrent relation between risk perception, parental connectedness and parental monitoring (all wave 1) and sexual risk behavior (wave 1), a multiple regression analysis was

conducted with the same steps as the logistic regression for early sexual debut. This analysis was performed twice, as sexual risk behavior was divided into two variables: one excluding virgins and one including all adolescents. For the longitudinal analysis sexual risk behavior (wave 2) was entered as dependent variable. Also here two analyses were performed: one excluding virgins and one including all adolescents. The same variables were entered within the steps as in the concurrent analysis, with the addition of sexual risk behavior from wave 1 (including and excluding virgins) as covariate in the first step.

The last question concerning whether the three variables risk perception, parental connectedness and parental monitoring (all wave 1) account for the possible difference in early sexual debut (wave 2) and sexual risk behavior (wave 1 and 2) between St. Maarten and the Netherlands, was addressed in two ways. First, the effect of country in the regressions would be lowered once the variables risk perception, parental monitoring and parental connectedness were entered into the equation. In order to test the hypothesis, standardized beta weights and their corresponding 95% confidence intervals of country were estimated via bias corrected bootstrap (1,000 re-samples). In the event that the confidence intervals overlapped by less than 50%, the beta weights would be considered statistically significantly different from each other ( $p < .05$ ; Cumming, 2009). Second, a significant interaction effect on (one of the) abovenamed interaction terms indicate that the specific predictor was relevant in one country but not the other. This could be an indication that this predictor accounts for the possible differences in early sexual debut and sexual risk behavior between adolescents from the Netherlands and St. Maarten.

## Results

### Descriptive statistics

For both waves of the Dutch sample and St. Maarten sample means ( $M$ ), standard deviations ( $SD$ ), ranges and Spearman correlations were calculated for all dependent and independent variables (Table 1, 2, & 3). All relevant assumptions were checked before executing the analyses. None of the variables met the normal distribution assumption; therefore the option bootstrapping was used during the analyses. No outliers or influential cases were found. Also the assumption concerning linearity between the dependent and independent variables was met. Finally, the assumptions of homoscedasticity and multicollinearity were met.

Table 1.

*Descriptive statistics from the Dutch sample including all variables in both waves.*

Variable	The Netherlands		St. Maarten	
	$M (SD)$		$M (SD)$	
	W1	W2	W1	W2
Early sex	-	.20 (.40)	-	.37 (.49)
Risky sex excl. virgins	.83 (.82)	.90 (.92)	1.17 (.72)	1.26 (.83)
Risky sex incl. virgins	.08 (.37)	.16 (.48)	.41 (.76)	.43 (.71)
Risk perception	3.34 (2.38)	-	3.89 (2.28)	-
Parental connectedness	2.98 (.79)	-	2.38 (.82)	-
Parental monitoring	4.01 (.78)	-	3.39 (.73)	-

Table 2.

*Spearman Correlations of all variables for the Dutch adolescents.*

	1	2	3	4	5	6
1 W2 Early sex	-	.24	.50***	-.21	-.03	-.10
2 W1 Risky sex	.24	-	.34**	-.35**	-.37**	-.29*
3 W2 Risky sex	.61**	.62**	-	-.30*	-.09	-.16
4 W1 Risk perception	.01	-.31	-.25	-	.21	.44***
5 W1 Parental connectedness	.21	-.45*	-.22	.22	-	.47***
6 W1 Parental monitoring	-.07	-.20	-.10	.46*	.50**	-

*Note.* Below the diagonal are the correlations for the group excluding virgins and above the diagonal are the correlations for all adolescents.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Table 3.

*Spearman Correlations of all variables for the St. Maarten adolescents.*

	1	2	3	4	5	6
1 W2 Early sex	-	.22	.16	.09	.00	-.13
2 W1 Risky sex	.17	-	.31*	-.04	-.11	-.11
3 W2 Risky sex	.25	.41*	-	.01	.12	.09
4 W1 Risk perception	-.05	-.34	-.04	-	.02	.05
5 W1 Parental connectedness	.22	.11	.29	-.10	-	.41**
6 W1 Parental monitoring	-.15	-.17	.02	.15	.36	-

*Note.* Below the diagonal are the correlations for the group excluding virgins and above the diagonal are the correlations for all adolescents.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

### Early sexual debut and sexual risk behavior in St. Maarten and the Netherlands

In order to examine whether there is a significant difference in early sexual debut between Dutch adolescents and St. Maarten adolescents, a chi-square analysis was performed. The results show that the Netherlands and St. Maarten differed significantly,  $X^2(1, N = 438) = 19.817, p < .001$ . While in the Netherlands only 7.66% of all adolescent participants that have had sexual intercourse registered themselves as early sexual debutants, in St. Maarten 22.56% of the participants debuted at an early age.

To examine if Dutch- and St. Maarten adolescents also differ in sexual risk behavior, a repeated measures ANOVA was performed. The analysis showed that sexual risk behavior among adolescents differed significantly between both countries when excluding- ( $F(1, 75) = 7.509, p < .01$ ), and including virgins ( $F(1, 661) = 34.748, p < .001$ ). This difference is reflected in Figure 1. There was no statistically significant effect of time on sexual risk behavior in both countries excluding- ( $F(1, 75) = .740, p = .392$ ), and including virgins ( $F(1, 661) = 1.868, p = .172$ ).

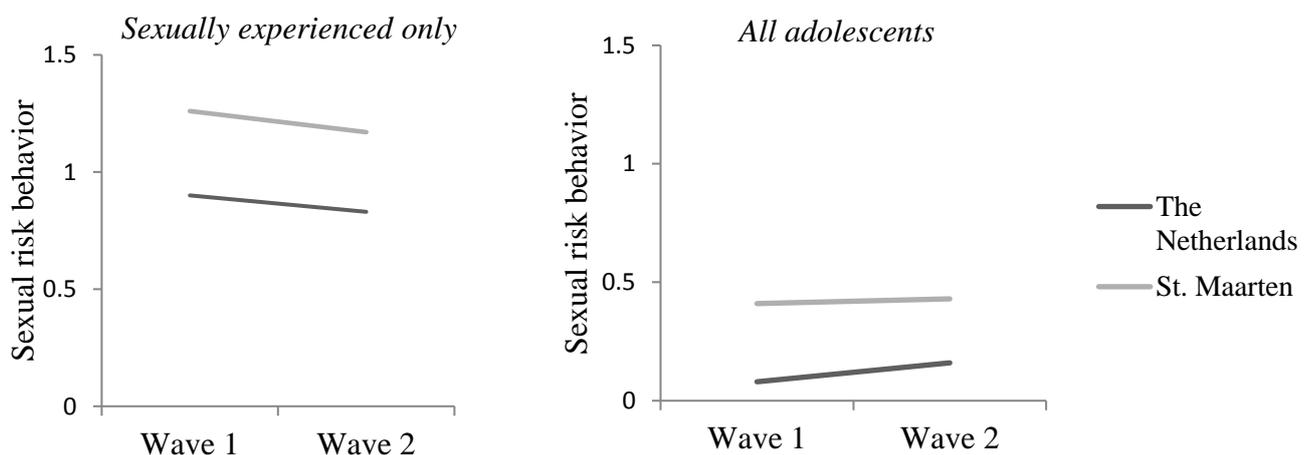


Figure 1. Line graphs on sexual risk behavior over time for the Dutch and St. Maarten adolescents that have had sexual intercourse (on the right) and all Dutch and St. Maarten adolescents (on the left).

**Risk perception, parental connectedness / monitoring in relation to early sexual debut**

To investigate whether early sexual debut is predicted by risk perception, parental connectedness or parental monitoring, for the entire sample and whether these associations differed by country, a logistic regression was performed. As reflected in Table 4, the only significant predictor was the country by risk perception interaction term. Follow-up analyses revealed that risk perception was significantly related to early sexual debut among adolescents in the Netherlands ( $B = -.27, p < .05$ ) but not related for the adolescents from St. Maarten ( $B = .20, p > .05$ ). For adolescents in the Netherlands, higher risk perception was associated with a lower rate of early sexual debut.

Table 4.

*Binary model of predictors of early sexual debut. Nagelkerke R-squared ( $R^2$ ), unstandardized regression coefficients (B), standard errors (SE) and 95% CI odds ratio based on 1,000 bootstrap samples.*

	Early sexual debut					
	Nagelkerke $R^2$	B	SE	95% CI Odds ratio		
				Lower	Odds	Upper
Block 1	.18***					
Age		-.67**	.25	.33	.51	.79
Country		.93*	.48	1.04	2.52	6.11
Block 2	.20					
Age		-.65**	.27	.33	.52	.81
Country		.87	.56	.91	2.38	6.20
Risk perception		.02	.14	.82	1.02	1.27
Parental connectedness		-.17	.44	.44	.84	1.61
Parental monitoring		.47	.43	.80	1.60	3.22
Block 3 <sup>1</sup>	-					
Country × Risk perception		-.50*	.28	.39	.61	.95
Country × Parental connectedness		-.07	.87	.29	.93	2.94
Country × Parental monitoring		.10	.87	.32	1.11	3.87

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; <sup>1</sup> Interaction effects were entered separately within block 3.

**Risk perception, parental connectedness / monitoring in relation to sexual risk behavior**

To answer the question whether risk perception, parental connectedness and parental monitoring predict sexual risk behavior in adolescence, a multiple regression analysis was conducted. First a cross-sectional (concurrent) analysis was executed for wave 1 sexual risk behavior. As reflected in Table 5, for both groups (including and excluding virgins) risk perception is significantly (negatively) related to sexual risk behavior. On the other hand, neither parental connectedness nor parental monitoring were found to have any relation with sexual risk behavior, nor were the interaction terms significant. In the same table, the longitudinal effects of all variables are displayed. As reflected in this table, none of the predictors were significantly related to sexual risk behavior longitudinally.

Table 5.

*Linear model of cross-sectional (wave 1) and longitudinal predictors of sexual risk behavior excluding virgins. R-squared ( $R^2$ ), unstandardized regression coefficients (B) and standard errors (SE) based on 1,000 bootstrap samples.*

	Sexual risk behavior							
	Wave 1				Wave 2			
	$R^2$	B	SE	Beta	$R^2$	B	SE	Beta
<b>Excluding virgins</b>								
Step 1	.07*				.52***			
Age		.07	.07	.11		-.02	.08	-.03
Country		-.43	.16	-.26*		-.10	.16	-.07
W1 Risky sex		-	-	-		.61	.09	.70**
Step 2	.21***				.55			
Age		.06	.07	.08		-.06	.08	-.09
Country		-.42	.17	-.25*		-.07	.19	-.05
W1 Risky sex		-	-	-		.70	.12	.80**
Risk perception		-.11	.03	-.33**		.05	.04	.14
Parental connectedness		-.09	.07	-.10		.17	.12	.19
Parental monitoring		-.10	.10	-.09		-.03	.13	-.03
Step 3 <sup>1</sup>	-							
Country × Risk perception		.03	.06	.06		.10	.08	.17
Country × Parental connectedness		.15	.16	.14		.15	.24	.14
Country × Parental monitoring		-.02	.19	-.02		.07	.23	.04

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; <sup>1</sup> Interaction effects were entered separately within step 3.

Table 6.

*Linear model of cross-sectional (wave 1) and longitudinal predictors of sexual risk behavior for all adolescents (including virgins). R-squared ( $R^2$ ), unstandardized regression coefficients (B) and standard errors (SE) based on 1,000 bootstrap samples.*

	Sexual risk behavior							
	Wave 1				Wave 2			
	$R^2$	B	SE	Beta	$R^2$	B	SE	Beta
<b>Including virgins</b>								
Step 1	.15***				.31***			
Age		-.10	.02	-.26**		-.06	.01	-.15**
Country		-.28	.05	-.25**		-.12	.05	-.11*
W1 Risky sex		-	-	-		.53	.08	.47**
Step 2	.19***				.31			
Age		-.09	.01	-.25**		-.06	.01	-.15**
Country		-.27	.05	-.24**		-.12	.06	-.10*
W1 Risky sex		-	-	-		.53	.08	.47**
Risk perception		-.04	.01	-.18**		-.00	.01	-.02
Parental connectedness		-.00	.03	-.00		-.01	.03	-.02
Parental monitoring		-.04	.03	-.07		.00	.03	-.00
Step 3 <sup>1</sup>	-				-			
Country × Risk perception		-.03	.03	-.08		-.01	.02	-.02
Country × Parental connectedness		-.06	.06	-.05		.06	.07	.05
Country × Parental monitoring		-.09	.07	-.08		.07	.07	.06

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; <sup>1</sup> Interaction effects were entered separately within step 3.

**Risk perception, parental connectedness / monitoring and the difference in early sexual debut and sexual risk behavior between Dutch and St. Maarten adolescents**

To examine whether the three variables risk perception, parental connectedness and parental monitoring account for the difference in early sexual debut and sexual risk behavior between St. Maarten and the Netherlands, two tests were conducted. First, it was examined whether the effect of country in the regressions should be lowered once the variables risk perception, parental monitoring and parental connectedness were entered into the equation (Cumming, 2009). This will be explained for early sexual debut. To evaluate the hypothesis, half of the average of the overlapping confidence intervals was calculated (2.65) and added to the step 1 Country beta weight lower bound estimate (1.04), which yielded 3.69. As the step 2 Country upper bound estimate of 6.20 exceeded the value of 3.69, the difference between the standardized beta weights of Country ( $\Delta b = .06$ ) was not considered statistically larger than the step 2 Country beta weight ( $p > .05$ ). The same is true for the beta coefficients in the concurrent and longitudinal analyses of sexual risk behavior. Thus, these variables do not account for the between country differences.

Second, 3 interaction terms involving country  $\times$  risk perception, country  $\times$  parental connectedness, and country  $\times$  parental monitoring were (separately) entered into the third step of the regression. As presented earlier, risk perception was significantly related to early sexual debut among adolescents in the Netherlands ( $B = -.27, p < .05$ ) but not related for the adolescents from St. Maarten ( $B = -.20, p > .05$ ).

### **Discussion**

The aim of the current study was to examine the differences in early sexual debut and adolescent risk behavior between Dutch adolescents and adolescents from St. Maarten utilizing longitudinal data. Risk perception, parental connectedness and parental monitoring were also examined, to investigate whether these factors account for possible individual and national differences. As expected, findings reflect a large difference between the two countries for both early sexual debut and sexual risk behavior. Here adolescents from St. Maarten were more likely to have an early sexual debut and be involved in sexual risk behavior compared to Dutch youth. Also, risk perception was significantly concurrently related to sexual risk behavior. That is, adolescents who perceived lower level of risk for unprotected or reckless sexual intercourse were more likely to be involved in sexual risk behavior. However, this association was not found for early sexual debut; the same is true for sexual risk behavior within the longitudinal analyses. Nevertheless, risk perception was found to predict early sexual debut for Dutch adolescents, but not for adolescents from St. Maarten. Furthermore, no significant associations were found for both parental connectedness and parental monitoring with early sexual debut and sexual risk behavior. Moreover, none of the factors account for the difference in early sexual debut and sexual risk behavior between adolescents from the Netherlands and St. Maarten.

#### **Early sexual debut and sexual risk behavior in St. Maarten and the Netherlands**

As hypothesized, when compared to the Dutch adolescents, significantly more adolescents from St. Maarten sexually debuted at the age of 13 or younger (7.66% compared to 22.56%). Moreover, they also engaged in significantly more sexual risk behavior. This indicates that the St. Maarten adolescents show less condom and contraception use and more sexual activity with multiple partners and someone they just met. These findings are in line

with several studies that found that Caribbean countries show more early sexual debut and sexual risk than European countries do (Currie, et. al., 2009; De Graaf, et al., 2012; Halcón, et al., 2003; Pilgrim & Blum, 2012; Ramiro, et al., 2015).

The finding that youth from St. Maarten are more likely to make an early sexual debut and to engage in sexual risk behavior needs to be taken seriously. As pointed out before, early sexual debut and sexual risk behavior are both associated with negative health outcomes, including sexually transmitted diseases such as HIV/AIDS. The Caribbean is second to sub-Saharan Africa with the incidence of HIV/AIDS (Kaestle, Halpern, Miller, & Ford, 2005; World Bank, 2000). It is found that this sexually transmitted disease is the leading cause of death in that region among females aged from 15 to 44 (UNAIDS/WHO, 2006). This indicates that the finding that these adolescents are often involved within sexual risk behavior, could have fatal consequences for these young people. Also, sexual risk behavior is associated with unintended pregnancy. In the Caribbean of all births, 18% was delivered by 15 to 19-year-olds (Baltag, 2009). This also has negative consequences, such as increasing the likelihood that these young mothers drop out of school, hampering the economic and psychosocial support well-being of the newborn (Yinger, De Sherbinin, Ochoa, Morris, & Hirsch, 1992). Given the potential negative consequences, early sexual debut and adolescent sexual risk behavior may have in St. Maarten, it is important to find out what causes these behaviors and use these factors to lower the negative consequences.

### **Risk perception in relation to early sexual debut and sexual risk behavior**

Concurrent results show that adolescents who perceived lower level of risk for unprotected or reckless sexual intercourse were more likely to be involved in sexual risk behavior. This confirms our hypothesis that there should be an association between these factors. Furthermore, this finding matches researches of Johnson, et al. (2002) and Reyna and

Farley (2006) who found that if adolescents assess health-threatening activities, they tend to minimize the risks and maximize instant pleasures which often leads to an increased likelihood of risk behavior.

Nevertheless, risk perception does not predict early sexual debut. The same is true for sexual risk behavior in the longitudinal analyses. This could be due to the age effect on risk perception, as this factor is known to change with experience. Most adolescents at wave 1 could be described as younger adolescents. Adolescents within this age group are more likely to rate risk behaviors disproportionately risky compared to older adolescents. When adolescents are older than 13 their ratings of risk behaviors often start to decline (Coker, et al., 1994). As more adolescents had sexual intercourse at the time the data collection started the next year, it may be more difficult to find a longitudinal relation. Future research should examine whether engagement in early sexual debut and sexual risk behavior changes risk perception rather than risk perception predicting these behaviors.

### **Parental connectedness / monitoring in relation to early sexual debut and sexual risk behavior**

Contrary to expectations, both parental connectedness and parental monitoring were not related in any way to early sexual debut and sexual risk behavior, for both adolescents in the Netherlands and in St. Maarten. This is in contrast to former studies in which both factors were found to be protective for both sexual behaviors (DiClemente, et al., 2001; Markham, et al., 2010; Miller, 2002). The results can be explained in several ways.

First, the operationalization of parental monitoring could have caused this discrepancy. Kerr and Stattin (2000) describe parental monitoring as knowing about the children's whereabouts. Although they stated that parental monitoring could be measured at its best by the three ways in which this knowledge can be gained: 1) parental solicitation; 2) parental

control; 3) child disclosure. Nevertheless, parental monitoring was measured by asking if the child thought that his or her parents probably know about his/her whereabouts. Questions on how parents gain this information were not included. For these reasons, the operationalization within the current study can be seen as only one aspect of parental monitoring and other aspects of monitoring may be more important.

Second, parental connectedness was measured by asking questions on the topic of support between parent and child. As Barber and Schluterman (2008) stated, the term connectedness is problematic, as it is used to cover multiple aspects of one's social experiences. Different or multiple aspects of parental connectedness might have been measured within other studies in which relationships were found with early sexual debut and sexual risk behavior. For example, according to Ackhard, Neumark-Sztainer, Story, and Perry (2006) parent-child communication and caring was an important aspect of parental connectedness. Here adolescents reported a greater prevalence of risk behavior when they felt they could not talk to their parents about these behaviors. Other studies on these factors found similar results (Aspy, et al., 2007; Huebner, & Howell, 2003; Whitaker, Miller, May, & Levin, 1999). In this study parental connectedness was operationalized as parent-child support. Considering the findings on communication, this might be a more important aspect of parental connectedness and the reason why no association between connectedness and early sexual debut or sexual risk behavior was found.

Another explanation why parental connectedness and parental monitoring were not significantly related to early sexual debut and sexual risk behavior is that the influence of peers may override parental influence during adolescence. Former literature shows that peer involvement in risk behaviors is a strong positive predictor of risk behavior (e.g., Hindelang, Dwyer, & Leeming, 2001). Peer participation in sexual risk behavior is highly related to involvement in and initiation of early sexual debut and sexual risk behavior. Moreover,

perceived peer activity has been found to be the strongest influence on sexual risk behavior, with higher perceived peer activity being related to more sexual risk behavior (Alexander, & Hickner, 1997; Metzler, et al., 1994; Millstein, & Moscicki, 1995, in Rai, et al., 2003; Van de Bongardt, Reitz, Sandfort, & Deković, 2015). Beal, Ausiello and Perrin (2001) found that peers and their behavior are more important predictors of risk behavior than parental modeling, disapproval and monitoring. Future studies could focus on investigating the difference in influence of peers and parental connectedness and monitoring on early sexual debut and sexual risk behavior.

**Risk perception, parental connectedness / monitoring in relation to the differences in early sexual debut and sexual risk behavior among Dutch and St. Maarten adolescents**

Contrary to expectations, risk perception, parental connectedness and parental monitoring did not account for the difference in early sexual debut and sexual risk behavior between Dutch and St. Maarten adolescents. A logical follow-up question on these results would be: what could account for the difference in early sexual debut and sexual risk behavior between the two countries? At least three possible alternative explanations are possible.

A first alternative explanation for the difference in early sexual debut between the Netherlands and St. Maarten is earlier pubertal maturation in (Caribbean) black girls compared to (European) white girls. It has been found that black girls have a lower mean age of pubertal onset, an earlier age at menarche and earlier breast and pubic hair growth (Biro, et al., 2006). The same is true for (Caribbean) black boys and (European) white boys, with findings of an earlier onset of penis- and pubic hair growth (Walvoord, 2010). Furthermore, James, Ellis, Schlomer and Garber (2012) showed that pubertal maturation is a significant predictor for early sexual debut. For that reason it is plausible to think that due to the earlier

pubertal maturation, adolescents in St. Maarten sexually debut more often at an early age compared to Dutch adolescents.

Secondly, the difference in sexual risk behavior between the two countries can perhaps be partially explained by the access to condoms and contraception in both countries. In order to lower sexual risk behavior, one has to be able to obtain (emergency) contraception without facing too many barriers. In the Netherlands condoms can be bought in the local supermarket, drug stores, gas stations, etcetera. For St. Maarten there will probably not be a difference on this aspect. Nevertheless, studies found that socio-economic status [SES] is related to condom use for both Europe and the Caribbean (Allen, Simon, Edwards, & Simeon, 2010; Lazarus, et al., 2009). As the population of St. Maarten in general has a lower SES than the Dutch population, it is not unlikely that due to this status the likelihood to use condoms would be lower in St. Maarten. On (emergency) contraception access, even clearer differences between the two countries can be found. In the Netherlands female adolescents do not have to face a lot of barriers in order to get the contraception pill. General practitioners (family doctors) do not demand a minimum age for female adolescents to get a pill prescription without parental permission. Moreover, even when these adolescents do not want to consult their family doctor on this topic, they have access to anonymous family planning clinics which are subsidized by the government (Ketting, & Visser, 1994). While in the Caribbean, according to Crawford, McGrowder, and Crawford (2006), 95% of the female adolescents encounter challenges in legitimately accessing contraceptive methods, in part due to negative attitudes towards female adolescents having sexual intercourse. In addition males are more encouraged to have sexual intercourse to promote their masculinity and prove their heterosexuality. One could say that attitudes could play an important role here. Finally, in the Netherlands it is possible to get emergency contraception without prescription, while for St. Maarten the International Consortium for Emergency Contraception registered that there are no legal emergency

contraception pills present on the island (International Consortium for Emergency Contraception, 2017; Ketting, & Visser, 1994). It can be concluded that access to condoms and contraception largely differ between the Netherlands and St. Maarten, and for that reason this could be one of the causes of the difference in sexual risk behavior between the two.

A third explanation for the difference in both early sexual debut and sexual risk behavior can lie in the difference in sexual abuse between both countries. In the Caribbean high rates of sexual abuse are reported. In the study of Halcón, et al. (2003) 9% of the male adolescents and 11% of the female adolescents reported to be sexually abused. Of this group, 32% of the males and 48% of the females declared that their sexual debut was forced. Alink, et al. (2011) found that, according to professional informants (youth workers), only 1% of all Dutch children report to be sexually abused. Knowing these numbers, one could conclude that due to the higher percentage of sexual abuse at a young age in St. Maarten, a portion of the early sexual debuts can be explained by this. This relation between sexual abuse and early sexual debut has been confirmed in a review by Senn, Carey and Venable (2008). Moreover, this same review, along with a review by Lalor and McElvaney (2010) and a study by Pilgrim and Blum (2012) also found that a history of sexual abuse is strongly associated with later sexual risk behavior. Lalor and McElvaney (2010) tried to explain this relation by reviewing several studies on this topic. They found several mediating variables such as low self-esteem, PTSD, and drug use. All in all, one can conclude that also sexual abuse could be a factor that is associated with the difference in early sexual debut and sexual risk behavior between St. Maarten and the Netherlands.

### **Strengths and limitations**

The current study has several important strengths. First of all the results on the difference in early sexual debut, sexual risk behavior and importance of risk perception

between the countries the Netherlands and St. Maarten, challenge the generalizability about these behaviors across cultures and countries. Secondly, this is a 2-wave longitudinal cross-national study; these types of studies are rare. Nevertheless, it is important to also take the limitations of this study into account when interpreting the findings of this study.

First, adolescents from St. Maarten were +/- 6 months older at the moment of data collection than Dutch adolescents. As only several months could already create a crucial difference in early sexual risk behavior and sexual risk behavior among adolescents, this age difference between the two countries could give a wrong image of the differences in early sexual debut and sexual risk behavior. However, in all analyses age was used as a control variable. For that reason the age difference should not give a skewed image of the differences between countries. Secondly, a low reliability was found for the sexual risk behavior scale in wave 1. It is reasonable to think that most adolescents that reported at that age (+/- 13 years) that they have had sexual intercourse, recently debuted. For that reason it seems unlikely that these adolescents already have had sexual intercourse with multiple partners. As this item will often be filled in with low values and other items with higher values, it is likely to get a lower reliability on this scale. Furthermore, the early sexual debut scale was based on a single item measure. As no further items were added to this scale, relevant information about the circumstances in which the early debuts took place remain unknown. Considering the abovenamed literature on sexual abuse, an item in which participants would have been asked if the first sexual intercourse was by choice could have made the scale more informative. Finally, this study is correlational in design and therefore causal inferences are limited.

### **Conclusion and implications**

The current study contributes to the literature on early sexual debut and sexual risk behavior across countries. Our results show that adolescents from St. Maarten are more at risk

for early sexual debut and sexual risk behavior than adolescents from the Netherlands are. Also, a concurrent relation was found between risk perception and sexual risk behavior indicating that adolescents who perceive a lower level of risk for unprotected or reckless sexual intercourse, are more likely to be involved in sexual risk behavior. Furthermore, risk perception was negatively related to early sexual debut for the Dutch adolescents. Risk perception, parental connectedness, and parental monitoring did not predict early sexual debut; or sexual risk behavior (longitudinally) and none of these factors accounted for the difference in these behaviors between the two countries.

Based on the results of the current study, implications for practice need to be considered. When developing prevention or intervention programs on early sexual debut or sexual risk behavior for adolescents, it is important to be able to ensure effectiveness. Risk perception was found to be negatively related to sexual risk behavior within the concurrent analysis. In the current study, this factor was measured by rating the risks and benefits on several sexual risk behaviors. This is an indication that also benefits should be taken into account when including risk perception into these programs. Furthermore, although parental connectedness and parental monitoring did not predict early sexual debut or sexual risk behavior, as stated before, other aspects of these factors might do. Therefore it seems unreasonable to exclude these factors from the programs. Future research on these factors should provide more concrete implications by which effectiveness of prevention or intervention programs on early sexual debut and sexual risk behavior can be guaranteed.

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