

Aline Salheb Alves^I

Maria Helena Baena de Moraes
Lopes^{II}

Locus of control and contraceptive knowledge, attitude and practice among university students

Lócus de controle e conhecimento, atitude e prática contraceptivas entre adolescentes universitários

ABSTRACT

OBJECTIVE: To assess the relationship between locus of control and knowledge, attitude and practice regarding pill and condom use among university students.

METHODS: The inquiry was developed in Campinas, a city in Southeastern Brazil, in 2006. A total of 295 adolescent newcomers to a public university answered a structured questionnaire and Levenson's multidimensional locus of control scale. The scores of the dimensions of locus of control were calculated and Spearman's correlation coefficient was used to assess their correlation with knowledge and practice concerning pill and condom use. In order to assess the relationship between the dimensions of locus of control and sociodemographic variables and variables related to the individuals' sex life, Kruskal-Wallis and Mann-Whitney tests were used.

RESULTS: Male adolescents had higher scores of powerful others externality when compared to female adolescents ($p=0.01$). Students living alone had lower internality ($p=0.01$). When locus of control was compared to condom use in the first intercourse, considering only the 102 students who informed the age of the beginning of sexual activity, greater internality was found among male adolescents who did not use condoms ($p<0.05$). When the locus of control scores were correlated with contraceptive knowledge and practice, it was found that the higher the powerful others externality locus, the lower the adequate use of contraceptive methods ($r = -0.22, p=0.03$).

CONCLUSIONS: The powerful others externality locus influences the practice of contraceptive use in this group of adolescents.

DESCRIPTORS: Adolescent. Condoms, utilization. Contraceptive Agents. Internal-External Control. Health Knowledge, Attitudes, Practice.

^I Programa de Pós-Graduação em Enfermagem. Faculdade de Ciências Médicas (FCM). Universidade Estadual de Campinas (UNICAMP). Campinas, SP, Brasil

^{II} Departamento de Enfermagem. FCM-UNICAMP. Campinas, SP, Brasil

Correspondence:

Aline Salheb Alves
R. Doutor Trajano de Barros Camargo, 1285
Centro
13480-756 Limeira, SP, Brasil
E-mail: asalheb@yahoo.com.br

RESUMO

OBJETIVO: Avaliar a relação do locus de controle com conhecimento, atitude e prática relacionados à pílula e ao preservativo entre adolescentes estudantes universitários.

MÉTODOS: Estudo tipo inquérito desenvolvido em Campinas, SP, em 2006. O total de 295 adolescentes ingressantes de uma universidade pública respondeu a um questionário estruturado e à escala multidimensional de locus de controle de Levenson. Foram calculados os escores das dimensões do locus de controle e o coeficiente de correlação de Spearman para avaliar a correlação com o conhecimento e a prática do uso de pílula e preservativo. Para avaliar a relação entre as dimensões do locus de controle e as variáveis sociodemográficas e variáveis relacionadas à vida sexual foram usados os testes de Kruskal-Wallis e Mann-Whitney.

RESULTADOS: Os adolescentes do sexo masculino apresentaram maior externalidade-outros poderosos quando comparados com as do sexo feminino ($p=0,01$). Estudantes que viviam sozinhos tinham uma internalidade mais baixa ($p=0,01$). Quando o locus de controle foi comparado com o uso de preservativo na primeira relação sexual, considerando-se apenas os 102 estudantes que informaram a idade de início da atividade sexual, foi encontrada maior internalidade entre os adolescentes do sexo masculino que não usaram preservativo ($p<0,05$). Ao correlacionar os escores do locus de controle com o conhecimento contraceptivo e prática, observou-se que quanto mais elevado o escore do locus de controle externalidade outros-poderosos, menor o uso adequado de métodos contraceptivos ($r = -0,22, p=0.03$).

CONCLUSÕES: O locus externalidade outros-poderosos influencia a prática de uso de método contraceptivo nesse grupo de adolescentes.

DESCRIPTORIOS: Adolescente. Preservativos, utilização. Anticoncepcionais. Controle Interno-Externo. Conhecimentos, Atitudes e Prática em Saúde.

INTRODUCTION

Contraception decisions made in adolescence, with little or no previous experience, may bring lifelong consequences.

Studies designed to understand the decision-making process concerning contraception in adolescents remain inconclusive. However, multiple factors are known to influence the decision-making process, resulting in attitudes and practices.³

Data show that there is a gap between knowledge and adequate practice regarding contraception.¹⁰

Personal characteristics and personality are also known to influence behavior, contributing to the use or nonuse of contraception in adolescence.^{1,3}

The locus of control scale is used for this type of assessment. Locus of control refers to an individual's generalized expectations concerning where control over subsequent events resides. In other words, who

or what is responsible for what happens. It may be internal, when the individual perceives him/herself as the author of the event source in which he/she is involved; or external, when the individual attributes control of his/her own life to other persons, entities or even to luck or destiny.

The term "locus of control" was created by Rotter, in 1960, and classified as internal and external control.¹³ It was later modified by Levenson, who created three dimensions of control: internality (subscale I), powerful others externality (subscale P) and chance externality (subscale C). These last two, control of one's life by powerful people and chance (destiny or luck as reference to occurrences in life), are assigned according to the subject's perception.⁴

It is expected that adolescent university students are worried about contraception because they are initiating their preparation for professional life. Information on

their contraceptive knowledge, attitude and practice may help in the selection of more adequate strategies for health education.

Therefore, the objective of the present study was to evaluate the association of locus of control with contraceptive knowledge and practice among adolescents.

METHODS

A knowledge, attitude and practice (KAP) survey was carried out among adolescent university students enrolled at a public university in Campinas, Southeastern Brazil, in 2006. This university enrolls 2,830 new students annually.³ Only students aged 19 years or less at the time of the interview were included in the study.

Aiming to obtain a more homogeneous sample, students enrolled in evening courses and those studying in other *campi* were excluded. Students enrolled in courses in which it was not possible to obtain authorization from the course coordinator to collect the data were also not included.

The sample size was calculated based on the gender percentages of students enrolled in 2006 (60% males, 40% females) and on the variables of interest. A correlation coefficient (r) of 0.20, with α equal to 0.05 and β equal to 0.10 (90% power) was considered, resulting in a sample size of 259 students.⁶

Authorization for data collection was obtained from 19 course coordinators.

At the beginning or the end of the class, and after the professor had granted authorization, the students were invited to participate in the study. Students willing to participate signed an informed consent form before answering the questionnaire. Questionnaire filling was supervised by the main investigator.

A questionnaire to collect data on sociodemographic characteristics and sex life was used (age, gender, color, religion, paid employment, existence of a partner, family income, age at initiation of sexual activity, current use of contraception, moment of first use of contraception – before or after initiating sexual activity), as well as questions regarding knowledge, attitude and practice with respect to pill and condoms.

The questionnaire was submitted to prior evaluation by three reviewers, who were investigators with experience in women's healthcare research and in the KAP survey methodology. The questionnaire was pre-tested in a group of 13 adolescent students in another campus at the same university. In order to assure anonymity

of the respondents, each course was identified by an alphabetic code. Respondents were identified in the questionnaires by numbers.

Questions referring to practice were separated into two groups of six questions: one for oral contraceptive pill users and the other for condom users. Scores for correct answers were added, each question being worth one point. Total scores varied from 0 to 12 for practice and 0 to 20 for knowledge. Attitude was evaluated as positive or negative for each related question.

Levenson's multidimensional locus of control scale adapted for use in Brazil was employed.⁴ This scale assesses how different dimensions of locus of control in university students are expressed, and the relationship between these dimensions and contraceptive knowledge, attitude and practice, specifically with respect to contraceptive pill and condoms, since these are the most common contraceptive methods used by adolescents.⁸ Levenson's multidimensional locus of control scale is composed of 24 items and has three subscales, each of which contains eight items: internality – subscale I (internal locus of control); powerful others externality – subscale P (powerful others locus of control); chance externality – subscale C (chance locus of control). The 24 items form a single, Likert-type scale with five levels of response: I completely agree (5); I agree (4); undecided (3); I disagree (2); and I completely disagree (1).⁴

In order to obtain the total score, the points achieved in each item of the subscale were added. For subscale I, items 1, 4, 5, 9, 18, 19, 21 and 23 were added. For subscale P: 3, 8, 11, 13, 15, 17, 20 and 22. Subscale C: 2, 6, 7, 10, 12, 14, 16 and 24. Scores varied from 8 to 40 points.

For data analysis, we considered that the higher the locus of control score, the greater the tendency to believe in that controlling source. However, when the values in a control source are low, this does not mean that the individuals perceive control as coming from another source. Both sources can be considered, because the dimensions are independent.⁴

A database was created using the Epi Info software, version 3.3.2. Data was checked for accuracy prior to analysis.

The descriptive statistics of the scores of the locus of control dimensions were calculated using Spearman's correlation coefficient to assess their correlation with knowledge and practice concerning pill and condom use.

In order to evaluate the relationship between the dimensions of locus of control and the sociodemographic

³ Comvest (Standing Committee for Vestibular) - 2006. [cited 2006 Jun 24]. Available from: <http://www.comvest.unicamp.br/estatisticas/perfil/perfil2006.pdf>

Table 1. Dimensions of locus of control of adolescents according to gender. Campinas, Southeastern Brazil, 2006. (n=295)

Locus	Male					Female					p*
	n	Mean	SD	Min.	Max.	n	Mean	SD	Min.	Max.	
Internality	153	27.9	3.6	18.0	40.0	142	27.9	3.8	9.0	36.0	0.79
Externality Powerful others	153	19.0	4.1	11.0	33.0	142	18.0	3.7	10.0	30.0	0.01
Externality Chance	153	18.7	4.1	11.0	30.0	142	18.1	3.9	9.0	28.0	0.22

* p = agreement probability

variables and variables related to the individuals' sex life, Kruskal-Wallis and Mann-Whitney tests were used. The significance level was established at 5%.

The study was approved by the Research Ethics Committee of the *Faculdade de Ciências Médicas, Universidade Estadual de Campinas* (authorization 516/2005).

RESULTS

Most students (82.7%) were aged 18-19 years old; 51.9% were male; 79.7% considered themselves white; 50.2% referred to themselves as Catholics; 92.2% did not work; 49.5% lived with their family and 32.5%, with friends; and the family income of 59.3% of the students was 6-10 times higher than the current Brazilian minimum wage or more.

Around half of these adolescents (48.8%, 144/295) had already initiated sexual activity, but only 34.6% (102/295) informed the age of initial sexual activity.

In Table 1, locus of control is evaluated according to gender. Male adolescents were found to have greater powerful others externality when compared to female adolescents.

In the correlation of locus of control with age, color, religion, paid employment, with whom they lived, existence of a partner, family income, age at initiation of sexual activity and current contraceptive use, no significant differences were found between these variables, except for students living alone, who had lower internality ($p=0.01$).

Table 2 compares the dimensions of locus of control with the moment of initiation of contraceptive use. No statistically significant difference was found.

Tables 3 and 4 refer to the 102 adolescents who had already initiated sexual activity, stratified by gender and compared regarding their locus of control. Except for condom use in the first sexual intercourse, results were not significant. Male adolescents who did not use condoms had greater internality.

For these 102 adolescents, the locus of control scores, correlated with the percentage of correct answers to the questions on knowledge and practice, showed that the higher the powerful others externality, the lower the adequate practice of contraceptive methods ($r = -0.221$, $p=0.03$).

Concerning attitude, both males and females had positive attitudes towards the two contraceptive methods. Since the groups were very homogenous, it was impossible to carry out any further analyses.

DISCUSSION

In the present study, male adolescents had higher scores of powerful others externality when compared to female adolescents. Nevertheless, this result should be viewed with caution, since there was little difference between sexes.

This finding differs from results reported by most studies carried out using locus of control, since greater internality tends to be associated with males.⁴ However, more recent studies report no difference in locus of control between males and females.²

Table 2. Dimensions of locus of control according to the moment of initiation of use of contraceptive methods among adolescents. Campinas, Southeastern Brazil, 2006. (n=102)

Moment of initiation of contraceptive use	Locus	n	Mean	SD	Min.	Max.	p
At first sexual activity	Internality	84	27.9	4.0	9.0	36.0	0.73
	Powerful others externality	84	10.2	3.6	10.0	27.0	0.08
	Chance externality	84	18.0	3.8	11.0	28.0	0.89
After having initiated sexual activity	Internality	18	28.3	3.7	21.0	35.0	
	Powerful others externality	18	17.2	5.34	10.0	30.0	
	Chance externality	18	18.3	4.39	12.0	26.0	

Table 3. Dimensions of locus of control of adolescents who had initiated sexual activity according to gender. Campinas, Southeastern Brazil, 2006. (n=102)

Locus	Female (n = 51)				Male (n = 51)				p
	Mean	SD	Min	Max	Mean	SD	Min	Max	
Internality	27.8	4.5	9.0	36.0	28.1	3.3	19.0	34.0	0.78
Powerful others externality	17.5	4.0	10.0	29.0	18.6	3.8	11.0	30.0	0.17
Chance externality	17.8	4.0	11.0	28.0	18.3	3.8	11.0	26.0	0.52

The results of the present study would appear to reflect changes that are in agreement with the current posture of greater assertiveness adopted by women in society. However, male adolescents, even university students, seem to be more influenced by others, which may also reflect these same changes.

Studies suggest that certain personality characteristics contribute to the use or nonuse of contraception by adolescents. Regarding locus of control, individuals who consider that the cause of what happens to them is external and out of their own control have lower likelihood of using contraceptives.^{1,3}

The present study found that the higher the powerful others externality, the lower the adequate practice of contraception. Therefore, it is fundamental to identify the influences (friends, health professionals and family members) and offer greater support to those individuals with higher externality (through adequate follow-up provided by specialized health professionals and the involvement of significant individuals), since this age group is strongly affected by external factors.

When the locus of control was compared with use of condoms in the first intercourse, higher internality was found among male adolescents who did not use condoms, a method that also prevents sexually transmitted diseases. Perhaps their feelings of invulnerability, very common among adolescents, could explain this result, which should be viewed with caution, considering the small number of male adolescents that

did not use condoms (only five). Therefore, further investigations are necessary.

A study in the United Kingdom, involving 150 undergraduate nurses,⁹ using Rotter's internality-externality scale, found that students with high internality scores in locus of control were better motivated to achieve objectives and showed greater satisfaction when compared to those who had higher externality scores. Also, men had higher internality scores than women (52.9% and 47.4%, respectively). Individuals with higher internality scores were also found to perform better academically and to deal better with stressful situations and environment changes.⁹

A study in the United States used Nowicki & Strickland locus of control scale on use of contraceptive methods in 66 female adolescents (mean age 17 years) and reported 47% of individuals with higher externality and 53% with higher internality scores. The study was based on the hypothesis that adolescents with higher internality scores in locus of control would be more effective users of contraceptive methods than those with higher externality scores, and this hypothesis was confirmed.¹¹

Another study in the United States, involving 1,851 women, used the Rotter scale to compare two groups of adolescents. Results showed that the group of adolescents who had become pregnant had higher externality scores in locus of control compared with the group of adolescents who did not become pregnant.¹² A study involving 508 female graduate students also

Table 4. Dimensions of locus of control of use of preservative on the first intercourse, according to the gender. Campinas, Southeastern Brazil, 2006. (n=102)

Locus	Did not use preservative				Used preservative				p
	Mean	SD	Min	Max	Mean	SD	Min	Max	
Female	(n = 9)				(n=42)				
Internality	27.3	3.7	21.0	34.0	27.9	4.7	9.0	36.0	0.59
Powerful others externality	18.0	5.2	10.0	27.0	17.4	3.7	10.0	29.0	0.73
Chance externality	17.7	4.6	11.0	27.0	17.8	4.0	11.0	28.0	0.88
Male	(n = 5)				(n=46)				
Internality	31.0	2.6	28.0	34.0	27.8	3.3	19.0	34.0	<0.05
Powerful others externality	20.0	5.8	15.0	30.0	18.4	3.6	11.0	27.0	0.81
Chance externality	17.6	5.3	12.0	25.0	18.4	3.7	11.0	26.0	0.69

used Rotter's Internality-Externality Scale and reported that birth control was more frequently practiced by individuals with higher internality scores, i.e. by 87% of the internals as opposed to 63% of the externals.⁷ Nevertheless, a Canadian study comprising 191 female university students, using the same scale, emphasized that there are controversies with respect to the relationship between internality in locus of control and the use of contraceptive methods.⁵

In the present study, no association was found between age and locus of control, probably due to the small age range (17-19 years). However, a study carried out over four consecutive years, involving 236 high school students in the United States, using the Nowicki & Strickland locus of control scale, found a gradual reduction in externality with the passage of time, and the authors considered that this decline may be a result

of the freedom acquired with the increase in age and with the feeling of empowerment.²

One of the limitations of the present study is the use of Levenson's multidimensional locus of control scale. This does not allow comparisons, as Levenson's scale has three independent dimensions whereas other studies used scales with only two dimensions.

If externality is a factor that truly predisposes individuals to unsafe contraceptive practices, this characteristic should be considered in interventions regarding contraception in order to increase the adolescents' sexual and reproductive empowerment. These individuals need to be stimulated to believe that the prevention of sexually transmitted infections, AIDS (acquired immunodeficiency syndrome) and undesired pregnancy are within their own control.

REFERENCES

1. Boruchovitch E. Fatores associados a não-utilização de anticoncepcionais na adolescência. *Rev Saude Publica*. 1992;26(6):437-43. DOI:10.1590/S0034-89101992000600010
2. Chubb NH, Fertman CI, Ross JL. Adolescent self-esteem and locus of control: a longitudinal study of gender and age differences. *Adolescence*. 1997;32(125):113-29.
3. Commendador KA. Concept analysis of adolescent decision making and contraception. *Nurs Forum*. 2003;38(4):27-35. DOI:10.1111/j.0029-6473.2003.00027.x
4. Dela Coleta MF. Escala multidimensional de locus de controle de Levenson. *Arq Bras Psic*. 1987;39(2):79-97.
5. Harvey AL. Risky and safe contraceptors: some personality factors. *J Psychol*. 1976;92(1st Half):109-12.
6. Hulley SB, Cummings SR, editors. *Designing clinical research: an epidemiological approach*. Baltimore: Williams & Wilkins; 1988. p.218.
7. MacDonald Jr AP. Internal-external locus of control and the practice of birth control. *Psychol Rep*. 1970;27(1):206.
8. Pirotta KCM, Schor N. Intenções reprodutivas e práticas de regulação da fecundidade entre universitários. *Rev Saude Publica*. 2004;38(4):495-502. DOI:10.1590/S0034-89102004000400003
9. Ponto MT. Relationship between students' locus of control and satisfaction. *Br J Nurs*. 1999;8(3):176-81.
10. Schor N, Lopez AF. Adolescência e anticoncepção: 1. Estudo de conhecimento e uso em puérperas internadas por parto ou aborto. *Rev Saude Publica*. 1990;24(6):506-11. DOI:10.1590/S0034-89101990000600009
11. Visher S. The relationship of locus of control and contraception use in the adolescent population. *J Adolesc Health Care*. 1986;7(3):183-6. DOI:10.1016/S0197-0070(86)80036-5
12. Young TM, Martin SS, Young ME, Ting L. Internal poverty and teen pregnancy. *Adolescence*. 2001;36(142):289-304.
13. Zanetti ML, Mendes IA. Tendência do locus de controle de pessoas diabéticas. *Rev Esc Enferm USP*. 1993;27(2):246-62.