Do risk perceptions explain sex differences in community integration and participation after spinal cord injury?

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Objective: To describe how men and women with spinal cord injury (SCI) rate the risks posed by a set of everyday activities measured using the Risk Inventory for persons with Spinal Cord Injury (RISCI), and to examine whether sex differences are related to community integration and participation.

Design: Cohort study.

Setting: Metropolitan Detroit.

Participants: One hundred and forty community-dwelling white and African-American men and women with SCI.

Outcome measures: RISCI scores, community integration, and level of and satisfaction with community participation.

Results: Study participants were just over age 40 years, and had been living with SCI for 10.8 years. One-third were women and 40% were African-American. Results showed women with SCI had higher RISCI scores (perceived more dangers) on every item on the RISCI Scale ($P < 0.001$). The items perceived to hold greatest risk were revealing personal information to others, going on a blind date, and going for a roll ("walk") alone after dark. Women with higher RISCI scores reported lower community integration ($P < 0.05$) and lower levels of and lower satisfaction with community participation ($P < 0.01$). For men, however, RISCI scores were mainly unrelated (except for community integration) to participation measures.

Conclusion: More research is needed to determine whether the levels of risk perceived by women are warranted and whether a sense of vulnerability for women with SCI is unnecessarily limiting their chances at "a good life" after injury.

Keywords: Community integration, Participation, Risk, Spinal cord injury

Introduction

Spinal cord injury (SCI) greatly affects an individual's community integration and social participation. Community integration and social participation are valued outcomes that persons living with SCI say are the most important issues to them.¹ Price *et al.*² examined the nature of participation with individuals with SCI 1 to 5 years after injury and reported how an entirely new set of skills are required to "negotiate the social world" after injury. According to these researchers, individuals living with SCI must become comfortable with their new identities as persons with disabilities, learn to present a greater attitude of confidence, and

learn how to shape others' expectations of their capabilities. These authors also emphasize that an interactive and reflective process must occur, where individuals with SCI become more socially aware and assertive in order to secure the community integration and social participation they desire.

Social assertiveness is already known to be a positive attribute for persons with SCI in the rehabilitation context.^{3,4} Research shows that injured persons who can become vocal self-advocates and articulate their needs have greater life satisfaction and quality of life.^{1,3,5-9} Other research suggests that persons with SCI who achieve the highest levels of community integration and participation are those who make a conscious decision to assume responsibility and "seize control" of their lives.¹⁰⁻¹² There is some evidence this

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requires being a proactive problem-solver and having a strong internal locus of control.^{4,11,13,14} But how exactly does an individual become self-confident and assertive and take the social risks necessary to achieve community integration and participation? Is it only a matter of learning new skills, or are there pre-disposing personality traits that make this process easier?

A recent study examining risk perceptions and SCI has taken one step toward answering these questions.¹⁵ Propelled by qualitative interview data that suggests community adjustment is hampered by individuals' lack of confidence and fears about trying new things in the community after injury, researchers developed the Risk Inventory for persons with Spinal Cord Injury (RISCI).¹⁵ The RISCI is a 12-item scale where individual rate the "riskiness" of 12 common activities and situations confronted by persons with SCI in daily life, including using special transportation for persons with disabilities, asking for help from a stranger, sharing personal information with someone new, relying on attendants for assistance, going for a roll ("walk") in your wheelchair in your neighborhood. Results from this research showed that the RISCI score could differentiate between individuals with SCI on the basis of several injury-related and demographic factors including sex. However, this research did not examine the larger question of whether an individual's RISCI score was related to other important outcomes like community integration and social participation.

Purpose and hypotheses

The purpose of the current study is to describe how men and women with SCI rate the risks posed by a set of everyday activities, measured using the RISCI,¹⁵ and to examine the extent to which sex differences in risk perception are related to community integration and participation after injury. Informed by the psychological literature on risk,^{16,17} we hypothesize that women living with SCI will have higher RISCI scores than men. Second, we hypothesize that individuals who perceive more risks (report higher RISCI scores) will have diminished community integration and participation.

Methods

Participants

Participants were drawn from a larger study of adults with SCI ($n = 140$) that focused on long-term adjustment to life in the community after injury (R01#1HD43378, funded by the National Institutes of Health; PI: first author). Participant recruitment centered on the city of Detroit and the surrounding metropolitan area. Recruitment efforts included word-of-

mouth from one participant to another, i.e. the snowball technique, as well as advertisements in local newspapers and disability newsletters, flyers posted in community centers, grocery stores and pharmacies, brochures distributed to SCI support groups, and information sheets posted in physician waiting rooms. Interested individuals who called the project office for more information were administered a brief set of screening questions over the telephone to assess study eligibility. A total of 164 individuals responded and 140 were enrolled in the study. All met the following inclusion criteria: (i) living independently in the community, (ii) aged 18–70 years, (iii) medical diagnosis of traumatic SCI, and (iv) current wheelchair use, all self-reported. Approval for the study was obtained from the Institutional Review Board at Wayne State University. All research participants gave informed consent and signed the required forms prior to data collection. Each participant received \$50 for participation.

Measures

Risk inventory for persons with spinal cord injury

The RISCI is a 12-item instrument designed to assess the "riskiness" of a set of common activities and situations routinely confronted by persons with SCI.¹⁵ The RISCI includes activities such as "going for a roll in your neighborhood" and "using transportation for persons with disabilities". Individuals are asked to rate each item on a 5-point scale as follows: 0, not risky at all; 1, low risk; 2, medium risk; 3, high risk; 4, extremely risky. The scoring is summative with a total score ranging from 0 to 48, with higher scores indicative of a perception that the activities pose more danger or risk. Research shows the RISCI has very good internal consistency with a Cronbach's $\alpha = 0.87$, and the ability to distinguish between individuals with tetraplegia and paraplegia, and also between women and men with SCI.¹⁵

Community integration measure

The community integration measure (CIM) is a 10-item instrument that quantifies the level of perceived community integration experienced by an individual, based on the personal attitudes, perceptions and beliefs of individuals themselves.¹⁸ The CIM consists of 10 statements rated on a 5-point Likert scale from 1, always disagree to 5, always agree. Three of the CIM items are "I feel like part of this community, like I belong here", "I can be independent in this community", and "I have something to do in the main part of my day that is useful and productive". The total CIM score is a single unweighted summary score between 10 and 50. McColl *et al.*¹⁸ original analysis of the CIM's

psychometric properties showed good internal consistency with a Cronbach's $\alpha = 0.87$ ($\alpha = 0.84$ in our sample), and the ability to distinguish between groups with and without disability.

Community participation

Community participation was assessed using two single-item questions: "How would you rate your current level of community participation?" (0, not participating at all; 1, participating a little; 2, participating some; and 3, participating a lot); and "How satisfied are you with your current level of community participation?" (0, not satisfied at all; 1, a little satisfied; 2, moderately satisfied; 3, very satisfied; and 4, completely satisfied).

Sociodemographic and injury-related variables

The sociodemographic variables included in the analyses were: age (in years), sex (male, female), ethnicity (White, African American, Hispanic, Asian, North American native, other), level of education (less than high school, high school graduate, some college or college degree), depression (coded as under a physician's care for depression or not), geographical living location (urban, suburban, rural), and current work status (paid work, unemployed, retired, student, homemaker). For analysis purposes, ethnicity was recoded into "White" versus "African American and other" because only six individuals were neither White nor African-American. Work status was recoded into "paid work" versus "other" given the literature that posits a relationship between work status and greater sense of community participation. The three injury-related variables were injury type (paraplegia or tetraplegia), injury cause (automobile accident, violence, fall, sports, motorcycle/all-terrain vehicle (ATV), other), and time since injury (in years).

Statistical analyses

Descriptive statistics were used to analyze participants' RISCi and CIM scores as well as scores on the two community participation questions. Since the CIM and participation scores were not normally distributed, non-parametric techniques were used to test for the relationships of these variables with RISCi scores. Linear regression was used to assess which sociodemographic and injury-related variables significantly accounted for the variance in RISCi scores. Logistic regression analysis was used to test whether RISCi scores were significant independent predictors of community integration (CIM score), and level and satisfaction with participation. Receiver operating characteristic (ROC) curve analysis was also used to better characterize the relationship between the

distribution of RISCi scores and integration and participation scores, and to determine whether a "threshold effect" was present. ROC curve analysis can be thought of as a graph that plots sensitivity against specificity. The goal is to identify a cut-point or threshold where the relationship between variables changes significantly.

Results

Table 1 presents the key sociodemographic and injury-related variables for the study sample. Participants were just over 40 years of age, and had been living with their spinal cord injuries for 10.8 years, on average. Reflecting our efforts to recruit greater numbers of women and African-Americans, 32% of participants were women and 40% were African-American (4% were other ethnicities). Thirty-one percent had a high school education or less. Twenty-one percent had paid work of some kind although the majority were unemployed. With respect to injury, there were nearly equal numbers of participants with tetraplegia (44%) and paraplegia (55%). Additional details are found in Table 1.

Sociodemographic and injury-related variable differences in RISCi scores

Scores on the RISCi differed significantly for a number of sociodemographic and injury-related variables. Women in the sample had higher RISCi scores (perceived the activities as more risky) than men ($t = 5.5$, $P < 0.001$) (Table 1). The mean total RISCi score of women was 27.3 versus men who had a mean score of 18.6 (out of a possible maximum RISCi score of 48). Individuals with tetraplegia had higher RISCi scores than those with paraplegia ($t = 2.1$, $P < 0.05$). With regard to etiology of injury, individuals injured in motorcycle/ATV crashes had significantly lower RISCi scores than those with other causes of injury ($F = 4.8$, $P < 0.001$). In addition, we observed that Whites regarded the RISCi items as less risky than non-Whites ($t = 3.2$, $P < 0.01$), as did those who were engaged in paid work (versus those who were not) ($t = 3.1$, $P < 0.01$). Individuals residing in an urban locale, i.e. the city of Detroit, regarded the items on the RISCi as riskier than those living in suburban or rural areas ($F = 3.8$, $P < 0.05$). Individuals who reported they were under a physician's care for depression had higher RISCi scores too ($t = 2.5$, $P < 0.05$). Age, time since injury (i.e. experience living with SCI), marital status, and education were not related to RISCi scores.

We investigated the association of sociodemographic and injury-related variables with RISCi scores via

Table 1 Sample characteristics

Variables (%)	Men	Women	Total
Sociodemographic	<i>N</i> = 95	<i>N</i> = 45	<i>N</i> = 140
Age (mean, in years)	39.9	39.6	40.1
Ethnicity (%)			
White	55 (57.9)	23 (51.1)	78 (56.1)
African-American and other	40 (42.1)	22 (48.9)	62 (43.9)
Current education (%)			
Grade school	8 (8.4)	7 (15.6)	15 (10.7)
High school graduate	17 (17.9)	12 (26.7)	29 (20.7)
Some college	70 (73.7)	26 (57.8)	96 (66.6)
Marital status (%)			
Never married	40 (45.3)	20 (44.4)	63 (45.3)
Married/cohabitating	31 (32.6)	11 (24.4)	42 (30.2)
Widowed, divorced, separated	20 (21.1)	14 (31.1)	34 (24.5)
Work status (%)			
Paid work	25 (26.3)	4 (8.8)	29 (20.7)
Unemployed, student, retired, other	70 (73.7)	41 (91.1)	111 (79.3)
Depression	26 (27.3)	18 (40.0)	44 (31.4)
Residential locale (%)			
Urban	31 (32.6)	14 (31.1)	45 (32.4)
Suburban	46 (48.4)	25 (55.6)	71 (51.1)
Rural	17 (17.9)	6 (13.3)	23 (16.4)
Injury-related			
Injury type (%)			
Paraplegia	53 (55.9)	25 (55.6)	78 (55.8)
Tetraplegia	42 (44.1)	20 (44.4)	62 (44.2)
Injury cause (%)			
Automobile crash	30 (31.6)	25 (55.6)	55 (39.6)
Violence related	20 (22.1)	11 (24.4)	31 (22.3)
Falls	8 (8.4)	4 (8.9)	12 (8.6)
Motorcycle/ATV	12 (12.6)	1 (2.2)	13 (9.4)
Sports	14 (14.7)	2 (4.4)	16 (11.5)
Other	10 (10.5)	2 (4.4)	12 (8.6)
Time since SCI (mean, in years)	10.3	10.7	10.4
RISCI (mean total score)	18.6	27.3	21.5

Percents may not sum to 100 due to rounding and missing data.

Boldface indicates significant difference by sex at $P < 0.05$.

RISCI, Risk Inventory for Spinal Cord Injury.

linear regression analysis. This analysis showed that only sex continued to be significantly and independently related to RISCI scores after controlling for the sociodemographic and injury-related variables described in the paragraph above ($t = 4.75$; $P < 0.0005$). Further analysis revealed there was a significant

Table 2 RISCI items by sex

Item	Women (mean)	Men (mean)	Overall (mean)
Revealing personal information	3.3***	2.5	2.7
Going on a blind date	2.9***	1.5	2.0
Banking alone	2.8***	1.8	2.1
Going for a roll alone after dark	2.7**	1.9	2.2
Using internet communication	2.4*	1.8	2.0
Relying on attendants	2.3**	1.7	1.9
Asking help from a stranger	2.0**	1.5	1.7
Staying home alone overnight	1.9**	1.1	1.4
Going for a roll in your neighbourhood	1.7**	1.1	1.3
Using transportation for the disabled	1.6*	1.2	1.4
Using an elevator	1.6*	1.2	1.3
Bathing/showering	1.5*	1.1	1.3

RISCI: 0, no risk; 1, low risk; 2, medium risk; 3, high risk; 4, extreme risk.

Significant P values indicate a significant sex difference on the RISCI items.

Sex comparisons were made using Mann-Whitney U .

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

sex difference on every item on the RISCi scale (Table 2). With respect to specific items, men and women rated “revealing personal information to a stranger” as the most risky item on the scale, with “going for a roll alone after dark” and “banking alone” also rated between “medium and high risk”. Overall, the ordering of the RISCi items from most to least risky was quite similar for both sexes except that “going on a blind date” was ranked second most risky by women and only ranked sixth for men. As Table 2 shows, other items rated as greater than “medium risk” was “going on a blind date”, “using internet communication” and “relying on attendants”, but this was only true for the women in the sample. Thus, seven of the 12 RISCi items were regarded by women as posing more than a moderate risk on average. In contrast, all but one item on the RISCi scale were rated as less than moderately risky by the men.

A closely related way of presenting the RISCi data is to show the proportion of women and men in the sample that reported “medium, high or extreme” scores (Table 3). Here we can see more plainly the degree to which women and men with SCI experience a sense of fear or danger as they engage in these activities. Some activities might be expected to elicit higher scores, for example, banking alone, or being out in a neighborhood after dark. But 80% of women also reported that relying

on attendants posed medium, higher, or extreme risk. Sixty-one percent of women also reported that staying home alone overnight posed medium, high, or extreme risk.

The relationship between RISCi scores and community participation and integration

Given the significant sex differences on the RISCi scale items, closer attention to the possible sex differences in the relationship between RISCi scores and community integration and participation were warranted.

Zero-order correlations between RISCi scores and the community participation variables were calculated. Significant correlations were observed between RISCi scores and each of the outcome variables for women; but there were no significant correlations for men (Table 4). This fact, coupled with the large differences in RISCi scores between men and women, suggested a possible threshold effect; that is, risk ratings of a set of everyday RISCi activities may only negatively affect community integration and participation when the risk perceptions are sufficiently high. We tested this possibility using ROC curve analysis. For women, the area under the ROC curve is significant with respect to each of the three outcome variables, and a RISCi score of 27 (=median RISCi score for women) provides in each case a reasonable cut-point with good sensitivity

Table 3 Percent of sample reporting “medium”, “high”, or “extreme” item risk by sex

Item	Women (%)	Men (%)	Overall (%)
Revealing personal information	97.7	78.7	84.8
Going on a blind date	88.7	44.7	58.6
Banking alone	81.7	49.9	60.1
Going for a roll alone after dark	79.6	59.5	66.0
Using internet communication	70.4	60.6	63.8
Relying on attendants	79.5	60.0	66.5
Asking help from a stranger	63.7	40.9	48.2
Staying home alone overnight	61.4	29.9	39.8
Going for a roll in your neighbourhood	54.6	31.9	39.1
Using transportation for the disabled	52.2	36.3	41.5
Using an elevator	52.2	35.1	40.5
Bathing/showering	45.4	33.0	36.9

Women $N = 45$; Men $N = 95$; Total $N = 140$.

RISCi: 0, no risk; 1, low risk; 2, medium risk; 3, high risk; 4, extreme risk.

Table 4 Correlations between RISCi scores and community integration and participation

		CIM	Level of participation	Satisfaction with participation
RISCi score	Men ($N = 92$)	-0.208	-0.030	-0.113
	Women ($N = 44$)	-0.342*	-0.377*	-0.316*
	Overall	-0.254**	-0.156	-0.201*

Correlations are Spearman's ρ .

* $P < 0.05$; ** $P < 0.01$.

Table 5 Step-wise forward logistic regression: predicting CIM and participation for men

Dependent variable	CIM		Level of participation		Satisfaction with participation	
	Beta	P value	Beta	P value	Beta	P value
Time since injury	0.089	0.025	0.107	0.016	0.082	0.009
Depression			1.293	0.030	1.215	0.024
Geography			1.226	0.039	1.554	0.004
RISCI	−0.079	0.017				
Model R^2 (Nagelkerke)	0.214		0.266		0.299	
Model significance	0.001		0.001		<0.0005	

RISCI, Risk Inventory for Spinal Cord Injury.

N = 86 – cases with missing data deleted list-wise.

Table 6 Step-wise forward logistic regression: predicting CIM and participation for women

Dependent variable = >	CIM		Level of participation		Satisfaction with participation	
	Beta	P value	Beta	P value	Beta	P value
Education	1.777	0.048			2.404	0.031
RISCI (≤ 27 , > 27)	−2.235	0.017	−2.803	0.011	−3.011	0.007
Model R^2 (Nagelkerke)	0.283		0.319		0.410	
Model significance	0.009		0.001		0.001	

RISCI, Risk Inventory for Spinal Cord Injury.

N = 42 – cases with missing data deleted list-wise.

and specificity (sensitivity > 0.75 ; specificity > 0.58). No similar cut-point was obtainable for men or for the sample as a whole. Further tests established that women with RISCI scores > 27 have significantly poorer levels of and satisfaction with community participation (Mann–Whitney U ; $P < 0.05$ in both cases) (data not shown). Thus, the relationships between RISCI scores and the outcome variables were quite different for men and women, not merely that the RISCI scores for men were shifted downward.

We then investigated whether RISCI scores were related to either integration (CIM score) or level or satisfaction with community participation, after controlling for a variety of sociodemographic and injury-related variables. We chose logistic regression because the three participation outcome variables were not normally distributed. For the purposes of this analysis, the CIM was dichotomized by using the cut-point of “40 or more” versus “39 or less” to reflect the score at which participants were, on average, at least “agreeing or strongly agreeing” with each CIM item as opposed to “neutral, disagreeing, or strongly disagreeing.” Level of community participation was dichotomized as participating “a little” or “none” versus “some” or “a lot”. Satisfaction with community participation was dichotomized as “a little” or “none at all” versus “moderately,” “very” or “completely”.

We estimated step-wise regression models for the sample as a whole, and separately for the men and women. Step-wise models are used when the goal is identification of a parsimonious set of independent variables most related to the dependent variable, as was the case here. Candidates for inclusion in the model were all of the socio-demographic variables (age, ethnicity, education, geographical living location, marital status, work status, and depression) and the injury-related variables (time since injury, type of injury, and injury cause). The forward step-wise regression analysis showed that the RISCI score for men was a significant independent predictor of CIM score ($P < 0.05$), but not of level of participation, or satisfaction with participation (Table 5). More important variables for men were time since injury, and geographical residence. For women, RISCI score (≤ 27 vs > 27) was significantly related ($P < 0.05$) to all three outcome variables (Table 6), and much more important overall in predicting these outcomes than any other variable. Backward step-wise regression analysis resulted in the identical models.

Discussion

This study highlights the significance of asking individuals with SCI to rate the riskiness of a set of everyday activities. As hypothesized, men and women regarded the riskiness of the RISCI items very differently, with

women perceiving a much higher degree of risk. In addition, while the risk ratings of the individual RISC scale items were ordered very similarly by men and women, RISC scores differed significantly on a number of other sociodemographic and injury-related variables, although in ways that were expectable. For example, individuals with tetraplegia had higher RISC scores than individuals with paraplegia, likely because those with greater paralysis and less mobility feel more physically vulnerable engaging in some of the activities in the RISC scale. Similarly, differences in RISC scores by geographical residence were most likely due to some activities such as “banking alone” or “rolling in my neighbourhood alone” actually being more dangerous in urban Detroit as compared to suburban or rural areas. However, among all differences in RISC scores by sociodemographic and injury-related variables, the major difference was by sex. Indeed, sex accounted for 19% of the variance in RISC scores and was the only variable of significance ($t = 4.9$; $P < 0.0005$) after controlling for all of the other sociodemographic and injury-related variables measured in the study. Thus, it is natural to ask whether women’s RISC scores are related to longterm community participation outcomes in a way that is different from men’s.

Our data showed that despite large differences in average RISC scores, the men and women with SCI in this sample did not have significantly different CIM scores, or level of and satisfaction with community participation. However, unadjusted correlations showed that women with higher RISC scores had poorer community integration and participation and that for men there was no such association. These results suggested a possible threshold effect; individuals who regard the set of activities on the RISC scale as sufficiently dangerous have poorer integration and participation scores.

These results were largely confirmed after controlling for a set of sociodemographic and injury-related variables. For women, RISC score was the most significant variable related to the CIM, and level of participation and satisfaction with participation. For men, RISC score was significantly related to the CIM only. Thus, perceptions of the dangers of a variety of everyday activities are importantly linked to community participation for women, but other factors are far more influential for men. Hence, our hypothesis regarding the relationship of RISC scores with levels and satisfaction with community participation was verified for women but not for men.

Further research is required to determine whether it is perceptions of risk per se, or actual risk-taking behavior

that is most salient in achieving desired community integration and community participation. Also needed is research to delineate the mechanisms by which risk (perceptions, actual risk-taking) works to facilitate positive changes in behavior related to community integration and participation.

A final question of interest is whether risk ratings are amenable to change. Although we cannot answer this question here because this study was cross-sectional in design, our data indicate that neither age nor time since injury affected RISC scores, suggesting that these perceptions of risk are more likely a reflection of stable personal traits, and in addition, may be inextricably tied to our social experiences in a gendered society. There is research in the social sciences to suggest that, young girls and women are taught that their bodies are gazed upon and are sensitized to potential dangers and often feel vulnerable as a result.^{19–21} Lee¹⁹ claims this process begins at puberty when young women realize that they have no choice but to beware of others’ gazes upon their changing bodies. Fredrickson and Roberts²⁰ explain that in contexts of male gazing is the *potential* for sexual objectification. When objectified, women are treated *as bodies-and* in particular, as bodies that exist for the use and pleasure of others. This would likely affect women’s comfort levels post injury in trying to re-integrate back into the community, and would most certainly be expected to influence the kinds of choices women with SCI make as they work to ensure that activities they choose to get involved in are not only interesting, but also safe and free from fear. Women with SCI, like all women, are aware of their physical vulnerability as compared to men. It is logical to expect this sense of physical vulnerability to be as great or even greater for woman with SCI.

Implications for clinical practice and community outreach

There are two main implications that arise from this study. The most obvious is that rehabilitation professionals must refine their practices and identify and respond to differences in how men and women living with SCI regard the riskiness of everyday activities. Most notably, therapists and other rehabilitation professionals must be attentive to women who rate the RISC activities as quite dangerous and assess how this may relate to issues of social and physical vulnerability that appear to disproportionately impact women’s levels of and satisfaction with community participation. If taking risks can be understood as “a desire for knowledge” as some have suggested²² then

rehabilitation professionals have an opportunity to actually reduce feelings of fear if they can provide information about how to navigate everyday activities more successfully. Thomas has studied sex issues and SCI and how, for women, perceptions about vulnerability play a role in self-regulation of participatory behaviors.²³ In the psychology literature more broadly there is also evidence to suggest significant sex differences in the perceptions of environmental risks, with women perceiving more dangers.^{24,25} In the social science literature researchers have argued that it is our gendered society and the violence women have experienced at the hands of men that have significantly contributed to women's fears about being in dangerous situations.^{22,26} For example, Law²⁶ writes: "The social coding of a body as female in our society produces a specific vulnerability to sexual assault by men, and an associated set of norms of respectable and safe behavior. Research has shown that these disciplinary norms, absorbed by girls from an early age, produce a more restricted neighborhood play area, and later operate to limit travel after dark and in 'dangerous' places, and constrain choice of modes such as walking or hitchhiking. We already know that women limit their trip-making through fear; we need to know more about the wider social practices which reinforce, sustain and naturalize this practice (p.580)." Thus, it may be that some women with SCI are like all women—able-bodied and disabled—and women consciously work to reduce their involvement in activities and situations where they perceive dangers and risks. Unfortunately, for those women in this study with higher than average RISC scores, positive outcomes like increased community integration and social participation may be reduced to the extent that they perceive dangers and risks.

The second study implication is an extension of the first and speaks to the need for more sophisticated approaches to community outreach in the years post-injury. While many may assume that the reason women with SCI are less visible in the community post-SCI has to do with their lack of interest in the available activities offered for wheelchair users—mostly wheelchair sports (the most common recreational activity promoted by SCI organizations), there may be more fundamental sex issues. The results of this study suggest that psychological traits such as social extraversion may play a role in risk perceptions and risk-taking after SCI. In addition however, empowerment through greater knowledge and skills and the development of social support networks show promise and should be promoted for women with disabilities. Our results support emerging findings from two recent qualitative

studies in Sweden where researchers have shown that women's support networks are effective at fostering personal confidence and situational comfort which in turn bolster community participation.^{27,28} Thus, if community outreach activities are to achieve their intended goals, further explication of the links between sex, risk perceptions, and participation in the larger social and physical environment is essential.

Study limitations

The results of this study are tempered by its limitations. First, while these data from a sample of adults living in and around Detroit includes a reasonable proportion of women and minorities, the sample is relatively small. Although the results are suggestive of important relationships in several areas which may in future hold in larger samples, insights generated from these data may not generalize beyond the sample and setting studied. Further, we note that risk perceptions for women and men with SCI may not differ from able-bodied women and men in general, and thus, we urge great care in considering this an issue specific to persons with SCI rather than a broader issue that is relevant in the general population too.

The second study limitation is related to the conclusions we derived on the basis of correlational data analyses. Correlations are associations, but they are not causal. Thus, while we imply that elevated perceptions of risk for women strongly diminishes community participation, the influence may actually operate in the opposite direction. This limitation is acknowledged and we recognize that more research is needed.

The final limitation pertains to our measures of participation. In our study we did not give participants a definition of community participation and it is certainly possible that individuals may have understood this concept differently. Still, the associations we found between RISC and CIM scores and between RISC scores and the two participation items were similar, mitigating this limitation. As Hammel *et al.*¹⁰ point out, the CIM and the two participation measures may capture, at least in part, the subjective experience of participation, a dimension often neglected in efforts which utilize individual "performance-based" data.

Conclusion

Women rate a set of everyday activities as far more risky than men. Elevated perceptions of risk are significantly associated with lower levels of community participation, less satisfaction with community participation, and worse community integration for women, but only worse community integration for men. Further research

is needed to understand why rating everyday activities as safer is so predictive of enhanced community participation for women living with SCI and why this is not true for men with SCI.

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