

A Test of Self-Determination Theory With Wheelchair Basketball Players With and Without Disability

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Guided by Self-Determination Theory (SDT), the present study examined the sport motivation and coping skills of male and female wheelchair basketball players with and without disability ($N = 72$). In line with SDT, results showed that intrinsic and extrinsic motivation as well as amotivation was found to be present in this sample of wheelchair basketball players. Results also demonstrated that the participants surveyed in the present study scored higher on self-determined types of motivation than non self-determined types of motivation, thus replicating past research with athletes without disability. Furthermore, wheelchair basketball players with and without disability did not differ significantly with respect to sport motivation and coping skills, suggesting that they are more alike than dissimilar. Finally, results revealed that self-determined motivation is associated with enhanced psychological functioning.

Much sport psychology research for individuals with a disability over the past twenty years has examined participation motives in adapted sport. Dickinson and Perkins (1985) were the first, to our knowledge, to demonstrate that motivation to continue in sports for active individuals in adapted sport comes predominantly from sources inherent in the activity (i.e., intrinsic motivation). A few years later, a similar result was found by Brasile (1988) in that he established that the pleasure of participation in and of itself (i.e., task-oriented incentives) is a key variable when understanding why wheelchair basketball players take part in their sport. Brasile and Hedrick (1991) replicated and extended this finding. They showed that task-related incentives are most important for both young and old wheelchair basketball players alike when taking part in adapted sport. Other researchers have also identified fun or enjoyment as an important motivating factor for becoming involved or practicing an adapted sport (Brasile, Kleiber, & Harnisch, 1991; Fung, 1992a; Kirkby, 1995).

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Although internal reasons, task-incentives, or intrinsic motivation are often invoked by athletes with a disability to explain their participation, this does not mean that external reasons, ego-incentives, or extrinsic motivation are not important when trying to understand why such individuals play or compete in adapted sport. Quite to the contrary, individuals who participate in adapted sport also identify extrinsic factors as an important variable to consider when explaining their participation in their respective sport.

Despite the fact that two types of motivation (intrinsic vs. extrinsic) seem to be implicated in explaining participation in adapted sports, no research to our knowledge has attempted to examine both of these constructs using a theory-driven approach (Crocker, 1993). That is not to say that theory-driven research has not been performed when studying the motivation of individuals who participate in adapted sport. For example, Brasile's (1988) research relied on personal investment theory (Maehr & Braskamp, 1986); however, if sport participation motivation is a multidimensional phenomenon, as is suggested by Brasile and Hedrick (1991), researchers need to utilize a theory of motivation that takes this into account. Furthermore, if researchers are to study participation motives in adapted sport, they need, according to Crocker (1993), a theory which also clearly defines the constructs to be studied and the relationships between them. One approach that meets this requirement is Self-Determination Theory (SDT; Deci & Ryan, 1985, 1991).

SDT suggests that to fully understand participation in adapted sport, three motivational constructs need to be considered: (a) Intrinsic Motivation (IM), (b) Extrinsic Motivation (EM), and (c) amotivation. IM refers to the fact of doing an activity for itself and the pleasure and satisfaction derived from participation (e.g., Deci, 1975; Deci & Ryan, 1985). As past research highlighted earlier, playing for fun or enjoyment in adapted sport is an example of IM. Moreover, a tripartite taxonomy of intrinsic motivation has been postulated by Vallerand and his colleagues (1989, 1992, 1993). These three types are IM to know (i.e., pleasure in learning new things in adapted sport), to accomplish (i.e., pleasure in trying to surpass oneself in adapted sport), and to experience stimulation (i.e., engaging in a particular adapted sport because of the stimulating sensations associated with it).

The second motivational construct that needs to be investigated if researchers are to better understand why individuals with a disability participate in adapted sport is EM. Different types of EM exist and these differ in their degree of self-determination (Deci & Ryan, 1985, 1991). At the lowest level of self-determination, one can find external regulation. In this particular case, behavior is regulated through external means such as rewards and constraints. For instance, a wheelchair basketball player might say, "I play basketball because I want to please my parents." Introjected regulation comes next and is the second type of EM. However, this type of motivation, while internal to the person, is not truly self-determined since it is limited to the internalization of past external contingencies. Thus, a statement such as "I play wheelchair basketball because I would feel guilty if I didn't" is indicative of this particular type of motivation. When participation in adapted sport becomes valued, judged important, and perceived as chosen for the individual, sport behavior is deemed to be regulated by identification. If this were the case, our fictitious wheelchair basketball player, when asked why he plays wheelchair basketball, would probably say, "I choose to play wheelchair basketball because this activity is important for me." The last type and most self-determined EM is

integrated regulation. In this particular situation, taking part in adapted sport is a harmonious part of the self. The choices athletes make are coherent with other aspect of their self-concept. Hearing our wheelchair athlete tell his friends, "I am not going out tonight because we have a big game tomorrow," would reflect this type of EM.¹

The third type of motivational construct that needs to be examined to fully understand adapted sport participation is amotivation. Amotivated individuals who participate in adapted sport feel incompetent, have expectancies of uncontrollability, and ask themselves why they engage in their respective sport. Thus, a Paralympic track and field athlete who is on the brink of burnout can be seen as experiencing a great deal of amotivation.

Much research supports the existence of these three types of motivational constructs in sport with athletes without disability (for reviews, see Vallerand, 1997; Vallerand & Fortier, 1998; Vallerand & Rousseau, 2001). Moreover, self-determined types of motivation (IM and identified regulation) are more reflective of the participation of athletes without disability in their sport than non self-determined motivation (introjected regulation, external regulation, and amotivation). Finally, women take part in sport for more self-determined reasons than do men, a result corroborated by Fung (1992a) with wheelchair athletes and explained by the idea that males are more oriented toward achievement than are females when placed in competitive situations. Still, only one study, to our knowledge, has examined and confirmed that self-determination theory's conceptualization of motivation is useful when trying to understand why intellectually challenged individuals take part in physical education classes (i.e., the Pictorial Motivation Scale cited in 1998 by Vallerand and Fortier). It thus seems that more research is needed to understand how SDT applies to other populations who practice adapted sport. More precisely, from a descriptive point of view, research is needed to verify if IM, EM, and amotivation are reflective of adapted sport participation. Furthermore, research is also needed to examine if the order of the various types of motivation proposed by SDT is similar to the one found for athletes without disability.

Comparing athletes with and without disability is a common practice within sport psychology research for individuals with a disability. Such a comparison is often justified by the idea that athletes with a disability differ from athletes without disability in that they "have had a major life trauma, loss, or chronic situation to which they have had to adjust" (Asken & Goodling, 1986, p. 315). Implicitly, such a statement suggests that wheelchair athletes may have acquired coping skills via years of therapy and, consequently, have superior psychological skills and motivation as compared to athletes without disability because these transferred into the sport environment (Cox & Davis, 1992). Performing such a comparison, however, is not always an easy task due to the difficulty of finding a comparable group of athletes without disability. For instance, from a strict methodological point of view, is playing wheelchair basketball the same as playing able-bodied basketball? Although this point is debatable, nearly one-third of the wheelchair basketball players in Canada do not have a disability (Brasile, 1992). These players are often categorized as "AB" (able-bodied) and compete freely against wheelchair players with a disability. This particular situation is interesting because one can compare wheelchair basketball players with and without disability within the same sport thus alleviating this problem. It is important to acknowledge that Kirkby (1995) performed such a

comparison and found that both wheelchair athletes with and without disability listed enjoyment or having fun as the most important reward they get from playing wheelchair netball. Despite providing tentative information about IM, this study remains descriptive and atheoretical. Clearly, research is needed to compare both these groups using a measure of motivation that has a sound theoretical foundation.

It is important to underscore that SDT does not only specify how motivation is structured, it also describes how sport motivation should function in adapted sport. One such hypothesis is that self-determined motivation is believed to be associated with enhanced psychological functioning (Deci, 1980). More precisely, as one progresses from amotivation to IM, the consequences of motivation should become increasingly positive. Despite the fact that Poulin and Vallerand (1994, cited in Vallerand & Fortier, 1998) confirmed that interest, concentration, and positive emotions experienced during physical education classes are positively correlated with the most self-determined forms of motivation (IM and identified regulation) but negatively with amotivation (the least self-determined form of motivation) for intellectually challenged individuals, it seems, once again, that more research is needed to test this idea with other groups who compete in adapted sports.

In order to test this particular prediction of SDT, we chose to look at the relationship between the various forms of motivation proposed by SDT and coping skills in sport. While Cox and Davis (1992) and Pensgaard, Roberts, and Ursin (1999) have investigated the coping skills of adapted sport participants, the relationship between coping skills and motivation has received little attention by adapted sport researchers. As suggested by Vallerand and Fortier (1998), athletes who are intrinsically motivated should spend more time practicing their skills. Furthermore, by focusing on the intrinsic element of sport, these athletes should experience less anxiety thereby helping them develop better coping skills. Furthermore, according to Amiot, Gaudreau, and Blanchard (2004), self-determined forms of motivation should also promote a more active engagement of the self when one is faced with a stressful situation thus leading to more adaptive coping; however, the reverse should be true for non self-determined motivations. Recent research by Amiot et al. (2004) with athletes without disability suggests that this reasoning is sound in that self-determined types of motivation have been shown to predict adaptive coping (i.e., task-oriented) strategies while non self-determined types of motivation have been found to predict maladaptive coping (i.e., disengagement-oriented) strategies in sport.

In summary, guided by SDT (Deci & Ryan, 1985, 1991), the present study examined the sport motivation and coping skills of female and male wheelchair basketball players with and without disability ($N = 72$). It was hypothesized that no differences would be observed as a function of disability. However, in line with past research (Fung, 1992a; Vallerand & Bissonnette, 1992; Vallerand, Fortier, & Guay, 1997) female wheelchair basketball players were expected to score higher on self-determined forms of motivation than male wheelchair basketball players. The hypothesis that self-determined motivation is associated with enhanced psychological functioning was also put to the test. More precisely, it was predicted, based on SDT, that the self-determined forms of motivations would be positively associated with coping skills in sport while non self-determined forms of motivations (especially amotivation) would be negatively associated with coping skills in sport.

Method

Participants

Participants were 72 (41 men and 31 women) wheelchair basketball players. The mean age for these participants was 30.1 years ($SD = 8.3$). The average playing experience for this sample was 7.7 years ($SD = 5.6$). Finally, participants reported being categorized in the following classes: class 1 ($n = 11$), class 1.5 ($n = 1$), class 2 ($n = 11$), class 2.5 ($n = 7$), class 3 ($n = 4$), class 3.5 ($n = 4$), class 4 ($n = 2$), class 4.5 ($n = 5$), able-bodied (i.e., individuals without disability, $n = 24$), and two participants failed to report their class. Lower class wheelchair basketball players are more limited in their functional skills (generally speaking thoracic level 7 paraplegics and above) while athletes assigned higher classes have few, if any, limitations.

Questionnaire

For the purposes of this study, wheelchair basketball players were asked to complete a short questionnaire that contained a multidimensional measure of sport motivation as well as a measure of coping skills in sport. The protocol used in the present study received institutional approval and informed consent was obtained from each participant.

Motivation in Wheelchair Basketball. The Sport Motivation Scale (SMS; Pelletier et al., 1995) was utilized to assess motivation in wheelchair basketball. A small modification was made to the instructions found at the beginning of this scale. Rather than asking participants “Why do you practice your sport?” the instructions asked them explicitly “Why to you practice wheelchair basketball?” thus avoiding any potential confusion. Based on self-determination theory, this particular measure of motivation in sport assesses IM to know, IM to achieve something, IM to experience stimulation, identified regulation, introjected regulation, external regulation, and amotivation and each of the subscales is scored on a 7-point Likert scale ranging from 1 (*does not correspond at all*) to 7 (*corresponds exactly*).

Coping Skills in Sport. The Athletic Coping Skills Inventory-28 (ACSI-28; Smith, Schutz, Smoll, & Ptacek, 1995) was used to measure the coping skills in sport of wheelchair basketball players. This particular measure of coping is composed of the following subscales: coping with adversity (i.e., “I maintain emotional control no matter how things are going for me”), peaking under pressure (i.e., “To me, pressure situations are challenges that I welcome”), goal setting/ mental preparation (i.e., “On a daily basis, I set very specific goals for myself that guide what I do”), concentration (i.e., “It is easy for me to direct my attention and focus my attention on a single object or person”), freedom from worry (i.e., “While competing, I worry about mistakes or failing to come through”), confidence and achievement motivation (i.e., “I feel confident that I will play well”), and coachability (i.e., “If a coach criticizes or yells at me, I correct the mistake without getting upset about it”). All of the subscales of the ACSI-28 were assessed on a 7-point Likert scale ranging from 1 (*almost never*) to 7 (*almost always*).

Procedure

Participants were recruited by contacting their team manager or coach prior to one of two wheelchair basketball tournaments (i.e., *Le Défi Sportif* and Women's Canadian Wheelchair Basketball Finals). At that time, the team manager or coach was asked to solicit the participation of his or her players for the present study. They were also instructed to tell their athletes that participation was voluntary and that all the information reported in their questionnaire was confidential. It is important to note that these two points were reinforced in the instructions found at the beginning of the questionnaire. After meeting with prospective participants, managers or coaches contacted the researchers and informed them of the number of players who were interested in taking part in the study. Once this number was established, questionnaires were sent to team managers or coaches one week prior to the tournament. The wheelchair basketball players then completed the questionnaire individually and these were returned to the researchers when the various teams arrived at the tournament site. To indicate informed consent, participants signed their copy of their questionnaire. Finally, to help bolster participation in the present study, a lottery draw was also held. When completing the questionnaire, participants were asked to indicate their name on a detachable coupon (this coupon was removed as soon as the questionnaires were returned to the tournament site to ensure that participants remain anonymous). Coupons were then placed in a bin and three cash prizes (i.e., \$75, \$50, \$25) were drawn. Winners of the lottery draw were then located and given their prize.

Results and Discussion

Reliability for the SMS and the ACSI-28

As can be seen in Table 1, the internal consistencies for the subscales of the SMS range from .65 to .86 for both participants with and without disability. Considering that these subscales are composed of 4 items, they appear to demonstrate an acceptable level of internal consistency. Furthermore, these values are similar to the ones found with athletes who do not have a disability (Brière, Vallerand, Blais, & Pelletier, 1995; Pelletier et al., 1995). As for the ACSI-28, alphas range from .53 to .88. Based on these results, it is important to be cognizant that the internal consistencies for the coachability and concentration subscales seem to be low even though the subscale are composed of only four items. These two subscales in the present study should therefore be interpreted with caution. Although we cannot speculate why the internal consistency of the concentration subscale is low (it was also low in Smith's et al., 1995 study), it is conceivable that the lack of internal consistency for the coachability subscale is because some wheelchair basketball teams who attended the tournament did not have a coach. Without such a referent, it may have been difficult to answer the particular items of this subscale for some wheelchair basketball players. Despite these two results overall, the majority of subscales of the ACSI-28 have an adequate level of internal consistency. Future research will need to replicate these findings, but as a whole, the results were encouraging enough to proceed with testing the two postulates of self-determination theory of interest for the present study.

Table 1 Alpha Coefficients, Means, and Standard Deviations for Sport Motivation and Coping Skills for Both Participants With and Without Disability

	Alpha coefficient	Mean	S.D.
Types of Motivation			
IM to experience stimulation	.85	4.6	1.4
IM to accomplish something	.84	4.6	1.3
IM to know	.86	4.2	1.4
Identified regulation	.74	3.8	1.3
Introjected regulation	.65	2.4	1.2
External regulation	.74	2.6	1.2
Amotivation	.66	1.7	0.9
Coping skills			
Coping with adversity	.81	4.6	1.1
Peaking under pressure	.88	4.8	1.2
Goal setting/ mental preparation	.72	3.7	1.3
Concentration	.53	4.8	0.8
Freedom from worry *	.80	4.8	1.1
Confidence and achievement motivation	.71	4.9	1.0
Coachability	.56	5.4	0.9

Note. *The higher the score, the less a wheelchair basketball player is considered free from worry. All variables found in this table were assessed using a 7-point Likert-type scale.

Testing for Differences Between Types of Wheelchair Basketball Players

Means and standard deviations of the different types of motivation and coping skills for the wheelchair basketball players surveyed in the present study are reported in Table 1.

To determine if differences existed between these two groups on the different types of motivation, a Type (wheelchair basketball player with vs. without disability) \times Gender \times Scale analysis of variance with repeated measures on the scale factor was conducted. The main effects for Type, $F(1, 66) = .29, p > .05$, partial eta-squared = .00) and Gender, $F(1, 66) = .61, p > .05$, partial eta-squared = .01 as well as the Type by Gender interaction, $F(1, 66) = .06, p > .05$, partial eta-squared = .00, were not significant. The Type \times Scale interaction, $F(6, 396) = .69, p > .05$, partial eta-squared = .01 and the second-order interaction Type \times Gender \times Scale, $F(6, 396) = .67, p > .05$, partial eta-squared = .11 were also found to be not significant.

This analysis did show the presence of a significant main effect for Scale: $F(6, 396) = 71.65, p < .0001$, partial eta-squared = .52. Most of the subscales differed from each other with exception of the following two pairings: IM to achieve—IM to experience stimulation and Introjection—External Regulation. Furthermore, the wheelchair athletes surveyed in the present study scored higher on self-determined types of motivation than on non self-determined motivation. More

precisely, the different types of motivation reflective of their wheelchair basketball participation were, in decreasing order, the following: (a) IM to experience stimulation, (b) IM to accomplish, (c) IM to know, (d) identified regulation, (e) external regulation, (f) introjected regulation, and (g) amotivation. Overall, these results are almost identical to those presented by Pelletier et al. (1995), suggesting that athletes with and without disability are more alike than dissimilar. Finally, a significant Gender \times Scale interaction, $F(6, 396) = 2.80, p < .05$, partial eta-squared = .04 was also uncovered. Simple main effects analyses revealed that female wheelchair basketball players scored higher than male wheelchair basketball players on IM to experience stimulation ($d = 0.55$) but scored lower on introjection ($d = 0.65$). Once again, these findings are similar to past research (Brière et al., 1995; Pelletier et al., 1995) in that women seem to be more self-determined than men in sport.

A Type (wheelchair basketball player with vs. without disability) \times Gender multivariate analysis variance was also conducted on the subscales of the ACSI-28. Both multivariate and separate univariate tests for the main effects for Type, $F(7, 59) = .50, p > .05$, multivariate effect size = .06 and Gender, $F(7, 59) = .83, p > .05$, multivariate effect size = .09 as well as the Type \times Gender interaction, $F(7, 59) = .52, p > .05$, multivariate effect size = .06 failed to reveal significant differences on all of the subscales found in the ACSI-28. These results are almost identical to those of Pensgaard et al. (1999) and Cox and Davis (1992). Although these authors used a different measure of coping skills, these results lend support, once again, to the idea that athletes with disabilities share more similarities than differences with athletes without disabilities.

Canonical Correlation Between the SMS and the ACSI-28

A canonical correlation analysis was conducted in order to examine the relationship between the different types of motivation measured by the SMS and the various coping skills indexed by the ACSI-28 (see Table 2). Results from this particular analysis indicated that two functions were significant: Wilks's lambda = .15, $F(49, 293) = 2.68; p < .0001$, multivariate effect size = .24; canonical correlations were .76 for function 1 and .65 for function 2. To interpret the two functions, canonical loadings of .30 were considered to be significant (Tabachnick & Fidell, 2001). As can be seen in Table 2, the different coping skills with the exception of freedom from worry are associated with all of the different types of motivation. Moreover, the highest canonical loadings found in the first function confirm the hypothesis that the more self-determined forms of motivation should be positively associated while the non self-determined forms (especially amotivation) should be negatively associated with coping skills. More precisely, coping with adversity, peaking under pressure, concentration and confidence, setting goals for oneself, as well as the belief that one is coachable are positively associated with self-determined forms of motivation (i.e., three forms of IM as well identified regulation) and negatively with amotivation. In short, this particular set of results indicates that the more self-determined a wheelchair basketball player is (i.e., playing for fun and/or by choice), the more this player reports having adaptive coping skills in sport.

Table 2 Canonical Loadings for Types of Motivation and Coping Skills

	Function 1	Function 2
Types of motivation		
IM to experience stimulation	.86	.25
IM to accomplish something	.83	.48
IM to know	.51	.77
Identified regulation	.57	.62
Introjected regulation	.38	.17
External regulation	.36	.27
Amotivation	-.49	.29
Coping skills		
Coping with adversity	.51	.44
Peaking under pressure	.75	-.28
Goal setting/ mental preparation	.73	.20
Concentration	.68	.17
Freedom from worry *	.12	.36
Confidence and achievement motivation	.89	.04
Coachability	.45	.29

Note. * The lower the score, the more a wheelchair basketball player is considered free from worry.

The results of function 2 show that coping with adversity and lack of freedom from worry were positively associated with IM to know, IM to accomplish things, and identified regulation. The canonical loadings on this particular function seem to confirm, once again, the idea that self-determined motivation is associated with enhanced psychological functioning (Deci, 1980); however, it is surprising that lack of freedom from worry is positively associated with some forms of self-determined motivations. By focusing on the intrinsic element (i.e., task-related component) of sport, wheelchair athletes should be free of worry, thereby helping them develop better coping skills. One potential explanation for this particular result is the idea that accomplishing or learning things in sports is a double-edged sword. On the one hand, accomplish or learning things in sport can be fun yet doing so involves a certain amount of ego-involvement (i.e., “Will I do well or am I doing well?”). In short, competing in wheelchair basketball may be fun and/or volitional, but there might still be a certain cost to doing so. Nevertheless, dealing with such ego-involvement is essential and because a positive loading was found for coping with adversity, it seems to suggest that this particular coping skill serves as a buffer for ego-involvement in sport. Future research will need to examine this possibility, but overall the present results generally confirm the idea that self-determined motivation is associated with enhanced psychological functioning (Deci, 1980; Vallerand & Fortier, 1998) and replicate, although with a different measure of coping skills, existing results with athletes without disability (Amiot et al., 2004).

Conclusion

There were two main goals to the present study. First, it examined the structure of motivation as proposed by SDT (Deci & Ryan, 1985, 1991) with wheelchair basketball players. Results from this study support the validity of SDT conceptualization of motivation in that intrinsic and extrinsic motivation as well as amotivation was found to be present in wheelchair basketball players. Furthermore, participants in the present study scored higher on self-determined types of motivation than non self-determined motivation, replicating past results found with athletes without disability (Brière et al., 1995; Pelletier et al., 1995). Results also indicate that wheelchair basketball players with a disability seem to be quite similar to wheelchair basketball players without disability, at least with respect to motivation and coping skills. This particular result is interesting because this is the first study, to our knowledge, that has attempted to compare wheelchair basketball players with and without disability within the same sport on a measure of coping skills in sport as well as a theoretically grounded measure of motivation. The second goal of this study was to test the hypothesis that self-determination is associated with enhanced psychological functioning. Overall, the present results from this study show that self-determined forms of motivations (IM and ID) were positively associated with coping skills in sport while amotivation was negatively associated with coping skills in sport thus confirming this particular hypothesis of SDT.

The present results are quite encouraging in that they reveal that the same psychological processes seem to apply to athletes with a physical disability, at least with respect to motivation and coping processes. These findings thus confirm the applicability of SDT for athletes with a physical disability. Furthermore, these results underscore that the SMS and the ACSI-28 are useful tools when looking at sport motivation and coping skills with athletes with a disability. Additional research is obviously needed to replicate the present findings with other populations who take part in adapted sport. From a more theoretical perspective, researchers need to look at factors that affect the motivation of athletes with a disability. For example, according to cognitive evaluation theory (Deci & Ryan, 1985), a controlling coach is likely to undermine an athlete's motivation because this individual affects one of the three basic needs (i.e., autonomy, competence, relatedness) of his players. More research is also needed to investigate other consequences of motivation (Vallerand, 1997). For example, examining the relationship between commitment to training (Fung, 1992b) and motivation seems like a potential research avenue. Greater levels of commitment to training should be associated with more self-determined types of motivation. Finally, testing the relationship between motivation, coping, and performance in future research seems warranted. Claiming that motivation leads to important consequences implies causality and forces us to acknowledge that the present study is correlational in nature, which is an important limitation due to the nature of this hypothesis. Future research should use prospective and experimental designs to test the relationship between these three variables. Such research should allow us to determine if motivation influences coping skills which, in turn, influence performance in adapted sports. Such research would allow us to have a better understanding of the nature of motivational processes and consequences at play with athletes with a disability.

Note

1. It is important to note that this type of motivation is presented for conceptual reasons only. At the time this study was conducted, no scale, to our knowledge, was constructed to measure such a construct.

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