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The role of experience in the assessment of pain in others

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Person experiencing pain is usually the most competent one to indicate intensity and unpleasantness of the pain he/she is feeling. However, self-reports of pain are not always possible to obtain, so different methods must be used – one of these is an assessment of pain experience conducted by another individual, a professional or an outsider. Since experience usually improves individual's efficacy in a certain field, it would be expected that professionals – who assess pain on a daily basis, would be more accurate in such task than outsiders – who have no experience with such assessment. The aim of this study was to investigate whether a level of observer's experience with the assessment of pain in others affects such assessment accuracy in experimentally induced pain. Observers, 32 students and 31 nurses, watched 6 video-tapes (3 volunteers in 2 different experimentally induced painful situations) and rated pain experience of the person on the tape. Results show no statistically significant difference between two samples; both samples generally underestimated pain intensity and unpleasantness – indicating that everyday experience with the assessment of pain in others does not improve efficacy in that task. Such finding suggests necessity of educational intervention which would enhance assessment accuracy of medical staff. Further studies are needed to investigate possible difference between professionals and outsiders in assessment accuracy of pain experienced in clinical conditions.

Key words: pain in others, assessment, experience

Pain is always subjective and therefore a person experiencing pain is usually the most competent one to indicate both intensity and unpleasantness of the pain he/she is feeling in a given moment. Paradoxically, the very reason that qualifies an individual as the most suitable for assessment of his/her pain is also the same reason that makes his/her assessment susceptible to a number of situational factors. Pain responses are found to be under influence of attention (Arntz & De Jong, 1993; Arntz, Dreessen, & Marckelbach, 1991), emotions (Godinho, Magnin, Frot, Perchet, & Garcia-Larrea, 2006; Roy, Piché, Chen, Peretz, & Rainville, 2009) characteristics of the experimenter / audience (Kállai, Barke, & Voss, 2004; Levine & de Simone, 1991; Williams, Park, Ambrose, & Clauw, 2007; Zeman & Garber, 1996), just to name a few - which makes self-assessment of pain inconsistent and therefore unreliable. Since self-reports of pain can sometimes be willingly or inadvertently distorted, and also are not always possible to obtain, one must use different methods for gathering information of other people's experience of pain.

Assessment of someone's pain experience conducted by another individual (usually a professional or a family member) is a strategy commonly used for obtaining information regarding someone's pain experience. Unfortunately, these assessments are not always as accurate as we would like them to be. A number of studies (Prkachin, Berzins, & Mercer, 1994; Teske, Daut, & Cleeland, 1983; van Herk et al., 2009) demonstrated existence of discrepancies between observers' and patients' pain ratings, in large proportion indicating underestimation of pain experienced by others. Several factors (chronicity of pain, the timing of the pain assessment, the use of global measures of pain behaviour, and pain site) were found to significantly moderate the relationship between self-reports of pain intensity and direct observations of pain behaviour (Labus, Keefe, & Jensen, 2003), suggesting that assessment accuracy of pain in others is unsatisfactory and seeks improvement.

The search for factors influencing assessment accuracy of pain experience in others led researchers to investigate, among others, the role of experience (in the widest sense) of the person rating pain in others. Since experience of an observer can be widely interpreted, a number of interesting findings suggested different aspects of experience to be involved in pain assessment. Studies indicated that observers with a family history of chronic pain attributed greater

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pain to patients than those without such history (Prkachin, Solomon, Hwang, & Mercer, 2001), that experiencing pain before assessment of pain in others increases participant's pain ratings of observed pain (Modic Stanke, Ivanec, & Ruzic, 2009; Robinson & Wise, 2004) and that a certain level of training enhances accuracy of pain ratings (Solomon, Prkachin, & Farewell, 1997).

In the present research, experience was defined as experience in assessment of pain in others. The aim of this study was to investigate whether assessment of other people's experience of pain is affected by the level of observer's experience with assessment of pain in others. Since long-term experience with particular task usually improves individual's efficacy in a certain field, it would be expected that professionals who deal with assessment of pain on a daily basis would be more accurate in that assessment than other individuals who have no experience with assessment of pain in others. However, contrary to this logical reasoning, several studies report an alarming trend revealing underestimation of pain by health-care providers when performing clinical assessments (Solomon, 2001). The present research examines whether professionals experienced in assessment, in comparison with non-professionals, would be more accurate in pain ratings of individuals experiencing acute pain experimentally induced in two different ways, by electrical stimuli and heat.

METHOD

Participants

As several studies demonstrated gender differences in assessment accuracy of pain in others (Prkachin, Mass, & Mercer, 2004; Robinson & Wise, 2003), only female observers were included in this study. Observers were 32 psychology students (age 18–25) and 31 nurses (age 26–50) who volunteered to participate in this study. The nurses included in the study were the ones who reported daily encounters with people in pain and daily experience with assessment of pain in others.

Materials

Six videotapes presented three healthy volunteers, two females (age 28 and 58) and one male (age 35), experiencing pain in two different *experimentally* induced painful situations. They freely decided to participate in the part of the study which requested experimental inducement of painful stimuli. Upon their arrival, volunteers were explained the procedure of the study, and were asked to sign consent form in order to continue with participation in the study. After that they were submitted to painful stimuli, first electrical and then heat stimuli. Electrical stimuli were presented on the palm of volunteers' right hand, successively rising in intensity eliciting increase in pain, and heat stimuli were presented on the palm of volunteers' left hand, continuous in intensity, yet in time eliciting more and more pain. In both situations volunteers were instructed to endure pain as long as they were apt to it and to stop stimuli (verbally in case of electrical stimuli or behaviourally in case of heat stimuli). They were additionally asked to verbally report development of pain sensation during heat stimuli. After each painful situation volunteers were asked to complete a series of visual analogue scales, measuring pain intensity and pain unpleasantness experienced during painful stimulation.

Both situations had restrictions regarding safety (intensity of electrical stimuli not higher than 12.5 mA; heat stimuli of 55 °C not longer than 2 minutes) - and they were not violated in any of six situations. To insure spontaneous reactions, during painful stimulation volunteers were separated from researcher and also had no knowledge that they were being videotaped. Upon completing their task in both situations volunteers were told that they were being videotaped and were kindly requested for permission to use their recordings in the second part of the study. Duration of each recording varied depending on volunteer's pain tolerance in a given situation, but each of six recordings never lasted longer than 2 minutes.

Pain intensity and pain unpleasantness, both in three volunteers experiencing pain and in observers assessing it, were rated on a 10 cm graphic scale, with only two points (0 and 10) to avoid assessment bias. The same scale was used to rate the level of insight about other persons' pain observers were able to gain viewing each videotape.

Procedure

Upon arrival, every participant/observer was explained the purpose and the procedure of the study, and was asked to sign consent form in order to continue with participation in the study. Next, each participant was escorted to his "workplace", separated from others, and seated in front of computer monitor where he would be presented with six standardized videotapes. Participant first completed a personal pain experience questionnaire, and then instructed to play six videotapes in a given order which was rotated between subjects to avoid sequence bias. Each observer was instructed to view each recording only once and to focus on each videotape the best they can so to gain insight in other persons' pain experience. Before viewing each videotape, the participant was informed about the type of pain that was to be seen, warned about the briefness of recording and reminded of his/her task. After the end of each recording, the observer was asked to complete a series of visual analogue scales, measuring pain intensity and pain unpleasantness experienced by the person on the videotape, and the level of insight in other persons' pain the observer was able to gain

viewing each videotape. Videotapes were presented with sound, so that observers could both see and hear spontaneous pain behaviour expressed by individuals while experiencing different experimentally induced acute pain.

RESULTS AND DISCUSSION

The primary goal of this study was to examine whether assessment of other people's experience of pain is affected by the level of observer's experience with assessment of pain in others. In order to answer that question two analyses were conducted - one addressing the question of difference between two groups of observers (nurses and students) who had different experience with assessment of pain in others, and another addressing the accuracy of pain ratings provided by nurses in different situations.

To investigate whether students and nurses differ in their ratings of pain intensity and pain unpleasantness, independent-samples *t*-tests were performed, one for each of three volunteers in each of two painful situations. The results of this analysis are presented in Table 1.

When ratings of pain intensity were tested, no statistically significant difference between students and nurses was found in five situations. The only statistically significant difference was found after viewing young female volunteer in heat stimuli situation where students compared to nurses provided higher pain intensity ratings. When ratings of pain unpleasantness were tested, results of previous testing were repeated - no statistically significant difference between students and nurses was found in all situations but one - indicating that students compared to nurses provided higher pain unpleasantness ratings after viewing young female volunteer in heat stimuli situation.

Results generally indicate that everyday experience with the assessment of pain in others does not improve the efficacy in that task, moreover, the only two statistically significant differences between two samples indicate trend in the opposite direction than would be expected. However, since both of these differences are associated with the same person (young female volunteer) and the same experimental situation (pain induced by heat stimuli), one should be careful in interpreting these results in terms of experience with assessment. These results may also be associated with behaviour of a young female volunteer on the videotape who was somewhat inadequate regarding situation she was in (she was masking pain expressions with a smile on her face). It is possible that nurses, because of their age or experience with observing painful behaviour, could not associate this type of behaviour with high level of pain, and accordingly assessed lower levels of pain intensity and unpleasantness. On the other hand, it might be easier for psychology students, because of their age and experience with inadequate behaviour in different situations, and also experience with experimental situations and knowledge that pain in laboratory can exist without distinctive painful behaviour, to understand inadequate behaviour of young female volunteer, which might had led to higher pain ratings in the given situation.

To investigate how accurate nurses are in their assessment of acute pain in others, their ratings of pain intensity

Table 1

Differences between students' and nurses' assessments of pain intensity and unpleasantness experienced by three volunteers in two different experimentally induced painful situations

volunteers	stimuli	pain intensity			pain unpleasantness		
		S. A.	N. A.		S. A.	N. A.	
		M *(SD)*	*M* *(SD)*	*t*(61)	*M* *(SD)*	*M* *(SD)*	*t*(61)
male	E	7.58 (1.85)	7.64 (1.67)	-0.13	6.46 (1.71)	6.59 (2.41)	-0.26
	H	7.49 (1.81)	8.02 (1.91)	-1.13	6.25 (2.03)	6.24 (1.95)	0.02
older female	E	5.83 (1.92)	5.85 (3.02)	-0.03	5.55 (1.80)	5.13 (2.72)	0.72
	H	5.98 (2.48)	5.95 (2.69)	0.05	4.57 (2.43)	4.42 (2.65)	0.023
younger female	E	6.62 (2.18)	7.30 (2.52)	-1.16	7.09 (2.35)	7.33 (2.48)	-0.39
	H	6.99 (1.87)	5.22 (3.28)	2.65**	5.25 (2.33)	3.52 (2.43)	2.89**

Note. E = electrical stimuli; H = heat stimuli; S. A. = students' assessment; N. A. = nurses' assessment
** p<.01.

Table 2

Differences between volunteers' self-assessment and nurses' assessments of pain intensity and unpleasantness experienced by three volunteers in two different experimentally induced painful situations

volunteers	stimuli	pain intensity			pain unpleasantness		
		S-A.	N. A.		S-A.	N. A.	
		value	*M* *(SD)*	*t*(30)	value	*M* *(SD)*	*t*(30)
male	E	8.20	7.64 (1.67)	-1.86	7.80	6.59 (2.41)	-2.79**
	H	9.20	8.02 (1.91)	-3.45**	8.20	6.24 (1.95)	-5.59**
older female	E	8.70	5.85 (3.02)	-5.25**	8.20	5.13 (2.72)	-6.28**
	H	8.50	5.95 (2.69)	-5.27**	9.10	4.42 (2.65)	-9.84**
younger female	E	6.80	7.30 (2.52)	1.11	7.20	7.33 (2.48)	0.29
	H	5.50	5.22 (3.28)	-0.48	5.70	3.52 (2.43)	-5.01**

Note. E = electrical stimuli; H = heat stimuli; S-A. = self-assessment; N. A. = nurses' assessment
** *p*<.01.

and unpleasantness experienced by three volunteers in two different experimentally induced painful situations were compared to the self-assessments of pain intensity and unpleasantness given by the same three volunteers that were actually experiencing pain induced by heat and electrical stimuli in laboratory settings. One-sample *t*-tests were calculated for each of three individuals in each of two painful situations (pain induced by heat and by electrical stimuli). The results of this analysis are presented in Table 2.

When ratings of pain intensity were tested, three out of six t-tests turned out to be statistically significant, one with male volunteer in heat stimuli situation and other two with older female volunteer in electrical and heat stimuli situation. These results indicate that in these three situations nurses' underestimation of pain intensity in others was statistically significant, but in other three situations (male volunteer experiencing pain induced by electrical stimuli, and young female experiencing pain induced by both electrical and heat stimuli) that was not the case. When ratings of pain unpleasantness were tested, only one out of six t-tests did not turn out to be statistically significant, i.e., the one with young female in electrical stimuli situation, while all others demonstrated that nurses underestimated pain unpleasantness in others. These results suggest that nurses are more accurate in assessment of pain intensity than of pain unpleasantness. It should, however, be noted that this accuracy is probably associated with individual differences in behaviour of volunteers in different experimentally induced painful situation. Since this appears to be important variable in the assessment of pain in others, further studies are recommended to investigate possible existence of such an effect.

Our results do not seem to be fortunate for health practice. The findings do not confirm that long-term experience with assessment of other people's experience of pain would lead to more accurate pain ratings - nurses underestimated pain intensity and unpleasantness in several situations and therefore their ratings cannot be considered as valuable replacement of self-reports of pain. Since this study investigated ratings of experimentally induced pain, generalization of findings is not entirely possible. Namely, pain that people experience in experimental settings differs from pain in real-life conditions, not only regarding duration and quality but also regarding possibility of control that individual has over situation he/she is in, which *undoubtedly* modifies behaviour of a person experiencing pain. Although pain in experimental settings can be intense, without the uncertainty of outcome and fear for safety that comes with it, reactions in such situations can be somewhat different than reactions in clinical settings. Considering differences between pain experience in experimental and clinical settings it would be interesting to see if the results of this research would be repeated in a study where students and nurses would rate pain intensity and unpleasantness of patients with long-term pain experience. Further studies should be considered in order to look more closely into possible difference between professionals and non-professionals when assessing different types of pain in both experimental and clinical conditions. Results suggest the need for an intervention among medical staff which would enhance their accuracy in pain assessment. Several studies show promising results regarding education of health care providers (Ger et al., 2004; Karlsten, Ström, & Gunningberg, 2005) offering hope to both scientists and patients that tendency to underestimate patient's pain can be reduced.

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