Not So Great Expectations: Characteristics Associated with Negative Expectations of Physical and Emotional Recovery in the Hours after Motor Vehicle Collision

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Trauma Recovery: Understanding Mechanisms & Promoting Healing

INTRODUCTION

- Persistent musculoskeletal pain (MSP) after motor vehicle collision (MVC) is common and results in substantial societal costs.[1,2]
- Negative recovery expectations have been found to be powerful predictors of adverse pain outcomes following MVC.[3] However, the determinants of negative recovery expectations remain poorly understood. For example, it is not known to what extent negative recovery expectations represent accurate self-assessment vs. self-fulfilling prophecy.
- Individual characteristics associated with negative recovery expectations may provide clues regarding recovery expectation determinants. To our knowledge, associations between individual characteristics and recovery expectations after MVC have not previously been assessed.

METHODS

- European Americans age 18-65 who presented to one of eight emergency departments (ED) (Figure 1) within 24 hours of MVC were recruited into this prospective observational study. Exclusion criteria included hospital admission after ED evaluation.
- Participants completed ED assessments including an evaluation of demographic characteristics, pre-MVC physical and mental health status, crash characteristics, initial post-MVC symptoms, sense of life threat, and sense of accident fault. Participants were asked to predict the number of days it would take them to recover emotionally and to recover physically. They were also asked to rate their certainty of recovery.
- Bivariate analyses assessed the relationship of expected time to physical recovery, expected time to emotional recovery, and certainty of recovery with sociodemographic factors, pre-MVC physical and mental health factors, MVC characteristics, and post-MVC psychological and somatic symptoms. Backwards stepwise logistic regression modeling (pin=0.10, pout=0.15) was then performed using characteristics associated at p<0.05 in bivariate analyses. This yielded a set of optimal predictive factors.
- These factors were then evaluated in individual logistic regression models adjusted for age, sex, and study site, with standardized betas shown.

Figure 1. Project CRASH Study Network

TABLE 1. Spearman correlations between expected time to emotional recovery, expected time to physical recovery, and certainty of recovery.

	ETER	ETPR	Certainty
Expected Time to Emotional Recovery (ETER)	1.00		
Expected Time to Physical Recovery (ETPR)	0.37*	1.00	
Certainty of Recovery (0-10 NRS)	-0.28*	-0.22*	1.00

*p < .0005

TABLE 2. Prevalence of poor recovery expectations in the emergency department (ED) and association with adverse pain and mental health outcomes (n = 948).

		6 weeks		6 months	
Characteristic	Prevalence in ED	RR Pain*	RR PTSD†	RR Pain*	RR PTSD
Estimated Time to Emotional Recovery (ETER) >4 weeks	364 (41)	1.4 (1.2-1.5)	1.5 (1.2-1.8)	1.3 (1.1-1.5)	1.5 (1.2-1.9)
Estimated Time to Physical Recovery (ETPR) > 2 weeks	415 (46)	1.5 (1.3-1.7)	1.4 (1.2-1.7)	1.6 (1.3-1.8)	1.3 (1.1-1.6)
Not Certain of Recovery	267 (28)	1.2 (1.1-1.3)	1.3 (1.2-1.5)	1.2 (1.1-1.4)	1.5 (1.2-1.9)

*Pain defined via pain score ≥ 4 (0-10 NRS) in the neck, shoulders, or back. †PTSD defined via Impact of Event Scale-Revised score > 33.

Expected Time to Emotional Recovery (ETER)

Question: *"How long do you think it takes for a person to emotionally recover from the kind of accident or injury you just had?"*

TABLE 3. Individual characteristics associated with long ETER* (AUROCC=0.714)

Characteristic	Std β	p-value
Peritraumatic distress (PDI)	0.81	<.0005
Sense of life threat (0-10 NRS)	0.39	<.0005
ED somatic symptoms (#)	0.37	<.0005
Trait Anxiety (STPI)	0.21	0.004
Physical Health Score (SF-12)	-0.13	0.068
Trait Optimism (LOT-R)	-0.19	0.008

*Adjusted for age, sex, and study site

Expected Time to Physical Recovery (ETPR)

Question: *"How long do you think it takes for a person to physically recover from the kind of accident or injury you just had?"*

TABLE 4. Individual characteristics associated with long ETPR* (AUROCC=0.704)

Characteristic	Std β	p-value
Overall Pain Severity (0-10 NRS)	0.65	<.0005
Number of body regions w/pain	0.44	<.0005
Sense of life threat (0-10 NRS)	0.32	<.0005
Patient Age (years)	0.23	0.001
Other Person's Fault (yes/no)	0.22	<.0005
Neck Pain prior to MVC (yes/no)	0.22	0.002
Depressive Symptoms (CES-D)	0.17	0.018

*Adjusted for age, sex, and study site

Uncertain of Recovery (UOR)

Question: *"How certain are you that you will fully recover from this accident, if on a scale of 0 to 10, the 0 is 'certain that you will not recover' and the 10 is 'certain that you will fully recover?' "*

TABLE 5. Individual characteristics associated UOR *(AUROCC=0. 0.690

Characteristic	Std β	p-value
Number of body regions w/pain	0.46	<.0005
Peritraumatic distress (PDI)	0.44	<.0005
ED Neck Pain (0-10 NRS)	0.43	<.0005
ED somatic symptoms (#)	0.34	<.0005
Trait Anxiety (STPI)	0.31	<.0005
Depressive Symptoms (CES-D)	0.28	<.0005
Trait Anger (STPI)	0.26	<.0005
Neck Pain prior to MVC (yes/no)	0.18	0.023
Trait Optimism (LOT-R)	-0.29	<.0005

*Adjusted for age, sex, and study site

RESULTS

- 859/948 (91%), 840/947 (89%), 861/946 (91%) of participants completed 6 week, 6 month, and 12 month follow-up, respectively.
- Interestingly, expected time to emotional recovery, expected time to physical recover, and certainty of recovery were only weakly associated (Table 1), suggesting that recovery expectations are not global but specific to outcome type.
- Physical recovery expectations in the hours after MVC most strongly predicted pain outcomes and emotional recovery expectations most strongly predicted PTSD outcomes (Table 2).
- Acute psychological distress (intense peritraumatic distress, greater sense of life threat) was most strongly associated with poorer expected emotional recovery, followed by number of somatic symptoms in the ED (e.g. dizziness, nausea, ringing in ears), and trait anxiety. Better self-reported physical health and trait optimism were protective against long estimated time to emotional recovery (Table 3).
- Acute pain severity and extent were most strongly associated with poorer expectations of physical recovery, followed by age, other's fault, and pre-MVC pain and depressive symptoms (Table 4).
- Both acute pain and acute psychological distress were associated with recovery uncertainty, along with pre-MVC pain and psychological characteristics (Table 5).

CONCLUSIONS

- Factors influencing expectations of physical & emotional recovery differ.
- Acute pain and acute psychological symptoms are the dominant predictors of physical and emotional characteristics, respectively.
- Further studies are needed to evaluate whether differences in the etiology of persistent pain after MVC may exist between individuals with positive vs. negative expectations of recovery.

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