Psychological subgroups due to the avoidance-endurance model (AEM) in female patients with work-related neck-and-shoulder pain (WRNSP) or whiplash

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Background/Aims.
In Europe, musculoskeletal disorders constitute a major problem in terms of self-reported symptoms with work-related neck-and-shoulder pain (WRNSP) and chronic pain and disability after car accidents, referring to Whiplash-associated disorders (WAD). In both conditions, the mechanisms by which pain relates to disability remain unclear. Pain-related fear seems to play a major role in WAD1 while task persistence seems to be a risk factor in WRNSP2. The Avoidance-Endurance Model of pain (AEM)3 suggests opposite pathways into chronic pain with distress endurance (DER), eustress endurance (EER), fear-avoidance (FAR) pattern in the high risk groups and adaptive responses to pain (AR) in low risk patients. FAR patients are supposed to develop chronic pain and disability due to avoidance behavior and physical deconditioning as long-term consequences. DER and EER patients will develop chronic pain via endurance behavior leading to avoidance/overload of physical structures. However, in LBP DER patients will show moderate to high disability and depression whereas EER patients reveal low disability despite high pain4. We suggest differences in the frequency of these subgroups between WAD and WRNSP but similar relation to pain and disability as in low back pain.

Methods
Sample and Measures
• 130 chronic pain patients (>12 weeks duration) from 4 European countries (The Netherlands, Germany, Sweden, Belgium) were screened into the AEM subgroups. 60 patients were diagnosed with WRNSP, 70 with WAD.
• Subscale Scores: Thought Suppression (TSS) and Behavioral Endurance Scale (BES) of the Avoidance-Endurance Questionnaire (AEQ) and depression (f-7-item Beck Depression Inventory- Primary Care, BDI-PC) differentiated between:
  - Fear-avoidance (FAR): BDI-PC >1, TSS and BES >3
  - Distress endurance patients (DER): BDI-PC =1, TSS >=3
  - Eustress endurance patients (EER): BDI-PC = 0, BES >=3
  - Adaptive patients (AR): BDI-PC <0, BES <3
• Disability: Pain Disability Index PD
• Pain intensity last week (NRS 0-10)

Results
Two 2-way ANOVAs were performed to test main effects for group (AR, DER, EER; FAR) and diagnosis (WRNSP, WAD) in the outcomes pain intensity and disability. Bonferroni post-hoc comparisons were calculated testing single group differences. The level of significance was p < .05. All analyses were conducted with SPSS 19.

Discussion
This study investigated for the first time criterion-related validity of subgroups based on the avoidance-endurance model (AEM) in a European sample of patients with chronic WRNSP and Whiplash. Interestingly, both samples differed in terms of frequency of AEM-subscores. In the WRNSP sample, most patients showed an adaptive pain response pattern (59%) while the maladaptive groups revealed a frequency similar to sub-acute LBP. In contrast, FAR patients are more frequent in WAD compared to WRNSP and both, FAR and DER patients are the largest subgroups. Only 26% WAD patients showed an adaptive pattern, merely 3% the EER pattern. As expected, in both samples all maladaptive groups showed higher pain scores than the adaptive patients. FAR and DER patients also revealed higher disability scores than the adaptive patients and EER showed low disability despite high pain intensity.

Conclusion
These results suggest the need for individually targeted cognitive-behavioral treatments in the maladaptive subgroups. For example, the FAR profile may indicate the inadequacy of exposure-based treatments, while endurance patients may benefit more from pacing-based procedures.

References

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Acknowledgements: This study was made possible by a grant No. 4EN 48 230 from the European eN project awarded to MVH as principle investigator.