Test-Retest Reliability of the Dizziness Symptom Profile (DSP)

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BACKGROUND & OBJECTIVES

- The Dizziness Symptom Profile (DSP) is a case history device, developed by Jacobson et al. (2019) to assist in the development of a differential diagnosis for patients who present with dizziness, vertigo, or general unsteadiness.
- The DSP consists of 31 symptom-based statements specific to Meniere's disease, SSCD, neuritis, BPPV, PPPD, and vestibular migraine and general unsteadiness. The individual item statements have been sub-grouped into unique disease-related subscales. The DSP yields a score from 0 – 100% for each of 7 subscales.
- Objectives of the present investigation were: 1) Assess short-term test-retest reliability for each individual item and for sub-grouped items from each of the DSP subscales 2) Assess internal consistency reliability for items that grouped in each of the DSP subscales, 3) Assess absolute reliability of the DSP subscales and calculate minimal detectable change scores for each subscale.

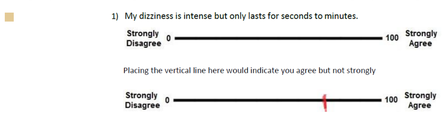
DESIGN

Participants:

- 150 adults (68 male)
- Age: mean 56.79 years, SD 15.69 years

Procedures:

- Subjects completed two administrations of the DSP. For each item the subjects responded using a 100 mm visual analog scale (VAS) with "strongly disagree" and "strongly agree" anchors.



- To assess test-retest reliability the subjects responded twice (mean test-retest interval 1.58 days, SD 1.78 days). Marks were measured using a 100 mm ruler. Data were analyzed using with SPSS (V26). The analyses included: Pearson correlation coefficients, Cronbach's α coefficients, Intraclass correlation coefficients (ICCs), and minimal detectable change (MDC).

RESULTS

Subscale	Mean score 1	SD 1	Endorsement >60%	Mean score 2	SD 2	Endorsement >60%
Migraine	38.40	32.90	31.33	37.97	32.37	32.67
Meniere's	24.90	26.50	11.33	24.00	25.34	12.67
SSCD	21.65	24.80	9.33	21.11	25.03	10.00
Neuritis	26.60	29.70	18.00	27.46	30.34	18.36
BPPV	40.70	26.40	30.00	40.13	26.26	28.00
PPPD	25.90	22.10	11.33	25.71	21.34	11.33
Unsteadiness	46.45	29.10	38.00	45.75	31.37	32.00

Table 1: Mean values and percent of the responses exceeding 60% (i.e., the value we accepted as indicating endorsement) for DSP subscales for both test and retest administrations.

Subscale	Cronbach's α 1 / α 2	ICC	95% confidence	SEM	MDC_{90}
Migraine	.89 / .89	.94	.92-.96	7.64	17.84
Meniere's	.84 / .83	.88	.84-.91	9.03	21.06
SSCD	.73 / .79	.85	.81-.89	9.51	22.19
Neuritis	.78 / .81	.88	.84-.91	10.33	24.11
BPPV	.74 / .77	.88	.84-.92	8.99	20.98
PPPD	.67 / .68	.91	.88-.93	6.67	15.56
Unsteadiness	.78 / .84	.86	.81-.90	10.53	24.58

Table 2: Statistical analyses values for each of the 7 DSP subscales.

- Individual item test-retest reliability was acceptable, with Pearson correlation coefficients ranging from 0.67 to 0.91 ($r(148)$ $p < 0.001$).
- Subscale test-retest reliability was good-to-excellent, with ICCs ranging from 0.85 to 0.94 for all 7 subscales.
- Subscale internal consistency was acceptable for 6 subscales, with Cronbach's α coefficients >0.7 for each test administration, while PPPD had coefficients approaching 0.7
- MDC values were calculated at the 90% confidence interval for the detection of true change foreach subscale.

DISCUSSION

- Previous research in the development and validation of the DSP indicated good agreement (~70%) with differential diagnoses developed by ear specialists (Jacobson et al. 2019).
- The current investigation shows the DSP is a psychometrically robust measure with strong test-retest reliability on individual items and subscales, and excellent internal consistency for DSP subscales.
- The DSP may be useful as a tool for providing an initial differential diagnoses framework prior to testing.
- MDC scores provide guidelines for clinically significant changes in subscale scores between multiple DSP administrations.
- We suggest the DSP can be utilized to observe positive changes, negative changes, and evolution of disorders over time.

CONCLUSIONS

- The test-retest reliability of the DSP is moderate to strong.
- MDC values for each subscale were developed.
- Where the output of the DSP suggests the presence of multiple co-existing dizziness diseases the results should encourage clinicians to consider the possibility that a patient may have multiple co-existing dizziness disorders which may better explain their symptoms than a single diagnosis.
- The DSP can provide a window to the natural history of dizziness disease.
- The DSP provides a bias-free assessment of the symptoms reported by the patient.
- The DSP coupled with the Dizziness Handicap Inventory (DHI) enables clinicians to evaluate the constructs of dizziness impairment, as well as dizziness disability/handicap.

KEY REFERENCE

- Jacobson GP, Piker EG, Hatton K, Watford KE, Trone T, McCaslin DL, Bennett ML, Rivas A, Haynes DS, & Roberts RA (2019). "Development and preliminary findings of the Dizziness Symptom Profile." *Ear Hear*. 40, 568-576.

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