

VROOM and OMO Assessments

Measuring functional vision and mobility in the community

VROOM = Vision-Related Outcomes in Orientation and Mobility

OMO = Orientation and Mobility Outcomes

Orientation and mobility combined (O&M) are fundamental to being alive. O&M weaves together our daily activities, enabling participation and belonging to a community. Thus, O&M assessment looks beyond body parts and isolated actions to consider environment, social context, personal goals and the many ways we live and move and have our being.

Scope. The VROOM and OMO tools are designed to work with people of any age, abilities or limitations, anywhere in the world. This includes you, your family and friends. To clarify roles though, this document refers to the person being assessed as the “client”.

Context. The VROOM and OMO tools use the same measurement template and are designed to be used together during ordinary O&M assessment. Part A measures elements of observed travel (out of 30), and Part B measures elements of wellbeing evident in the past month, identified during interview (out of 20). Subscales within each tool aggregate to a score out of 50 on the spot so that the implications can be discussed with the client.

Why two tools? Vision and mobility are measured separately, because one does not predict capability in the other. The VROOM tool rates functional vision for O&M, with scores ranging from functional blindness (0) to effortless use of full vision during pedestrian travel (50). The OMO tool rates the client’s O&M capability regardless of vision, with scores ranging from comatose (0) to fluent, confident mobility that meets the client’s goals (50).

Who can assess? The VROOM and OMO tools are intended for use by an orientation and mobility (O&M) specialist or a guide dog mobility instructor. However, the scales are co-rated by the assessor, the client, and any other relevant stakeholders present (e.g. family members, professionals). The resulting scores reflect shared, confirmed knowledge about what the client does at the time of assessment, not what one person thinks the client should do, used to do, or can do sometimes in ideal conditions.

When to use the VROOM and OMO tools. The tools can be scored multiple times in different situations, enabling functional comparisons:

- At referral. Benchmark the client’s functional skills using whatever aids are usual, to explore relationships between vision, mobility, and wellbeing, define skill gaps, identify relevant service options, and choose program goals.

- To measure fluctuations. If the client's skills vary in different conditions, assess in daytime or in best conditions and again at whatever time skills are worst (e.g., light: compare day/night travel; fatigue: compare morning/afternoon travel).
- To identify the need for a mobility aid. Compare unaided travel with guided travel, or travel at home with travel in unfamiliar places, or difficult conditions.
- To measure program outcomes. Assess before and after training/intervention (e.g., without, then with a new mobility aid) in similar travel conditions.
- To measure change over time. Assess at regular intervals to measure functional deterioration (e.g., progressive vision or medical conditions) or functional improvement (e.g. consolidating new functional vision or mobility skills).

Instructions for assessors

1. During ordinary O&M assessment, interview the client about lifestyle, functional vision and mobility. The socio-demographic questions standardise this background information for research purposes, but you might have additional questions you ask as part of your own assessment routine or your employer's assessment protocol.
2. Go for an interactive walk together. Start the functional assessment in a familiar place such as the client's home, classroom or workplace and observe the client engaged in at least three travel-related tasks. For example, at home "Can you show me where you keep the pegs and hang out the washing? I'll watch what you do, and you can explain what you see." Then move to more dynamic places relevant to the client and observe at least three more travel tasks. For example, "Can you take me to the shop where you buy the newspaper? I'll be next to you some of the time and behind you some of the time. You can stop anytime and tell me what you see, or what's important to you."
3. The co-rating conversation can be woven through your walk or happen at the end. Work out your own style.
4. When co-rating Part A: Observed Travel, you will need to explain the five elements of travel, and what 3,2, 1 and 0 mean (different for VROOM and OMO).
5. When co-rating Part B: Wellbeing, you will need to explain what each scale measures. Then read out relevant performance indicators and ask the client to choose the number that best represents what they've been doing/feeling in the past month. There are several ways to do this, and it depends on the client's patience with the process:
 - Some clients like to hear every performance indicator before they choose.
 - Some clients like to know the broad range of options without all the detail. In this case, you can read out the lowest (0), middle (2) and highest (4) levels on each scale then focus on the more likely options.

- If the client is impatient with co-rating, you might just read the two most likely options on a scale, making sure the client has the chance to indicate a preference.
6. The co-rating process is shared, but the weight of opinion can shift. The assessor is likely to lead ratings in Part A: Observed Travel then seek confirmation from the client. Part B: Wellbeing scales rate the client's actions and feelings in the past month when the assessor hasn't been around, so the client's opinion weighs more.
 7. When opinions differ due to lack of information, you might need to observe the client in more situations. When opinions differ due to lack of insight or maturity, then you might need to involve other stakeholders in co-rating.
 8. When there is indecision between two levels on a sub-scale, always choose the lower rating. This captures the client's worst performance and gives room to improve. Maintaining this rule pre-post training avoids artificially inflating training outcomes.
 9. Ratings need to be justified, so where possible, record brief comments from the client, the assessor, and other stakeholders near the relevant ratings.
 10. Prepare to be surprised by client's choices – blind people can often score VROOM points if their light perception is occasionally useful.
 11. Once you have scored every rating, add up the total VROOM and OMO scores, then discuss patterns of behaviour, variations and implications with the client.

Assessing children and people with multiple disabilities

Independence has many interpretations and sometimes it is better to travel accompanied, so the VROOM and OMO scales focus more on fluency than independence. We don't expect a two-year-old to travel as fluently as an adult, so we don't expect a two-year-old to score as high on the VROOM or OMO scales either. When rating each scale, put aside fixed expectations about what a person should be able to do given their age, diagnoses or the aids they use, and let each rating scale tell its own story. Functional performance will differ with the client's context, skills, interests, and motivation as much as age or diagnoses.

In Part A: Observed Travel, suggest games, play or tasks of interest that encourage the client to move as freely as he or she is able. If all travel is guided, offer opportunities for the client to make choices about direction and destination so you can assess orientation skills. If the client doesn't walk independently, then observe any movement the client does initiate, such as rolling, crawling, bum-shuffling, swinging, rocking in a hammock or wheelchair transfers.

In Part B: Wellbeing, each scale attempts to embrace the least and most capable functioning possible. Think broadly about human development and capability. If direct communication with the client is difficult then include others in the co-rating process who are experienced at interpreting the client's responses and preferences.

O&M Environmental Complexity Scale (ECS)¹

The VROOM and OMO tools use the O&M Environmental Complexity Scale to compare different travel environments (figure 1). The six levels of scale assume that travel challenges are cumulative, so the assessor only needs to note the highest level of complexity encountered in the venues compared during assessment.

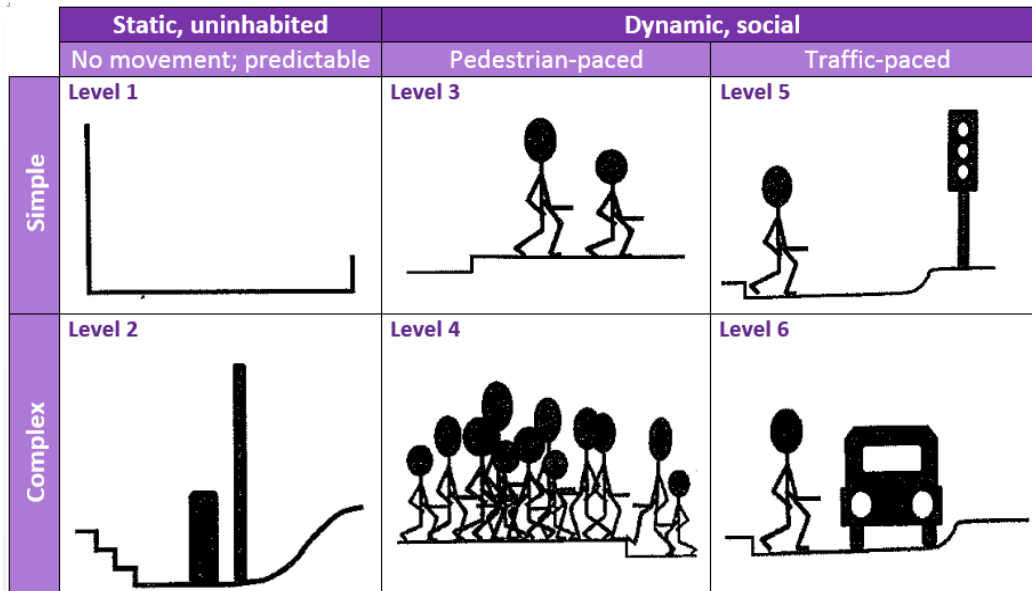


Figure 1: O&M environmental complexity scale

Level 1: Static, uninhabited places with level groundplane, no obstacles e.g., empty corridor, gymnasium or sports ground

Level 2: Static, uninhabited places with varying groundplane and/or obstacles e.g., steps, ramps, loose surfaces, furniture, poles

Level 3: Pedestrian-paced places (no faster than jogging) with a clear, continuous path of travel e.g., quiet residential footpath, workplace, or school corridors during class-time

Level 4: Pedestrian-paced places where the pathway is repeatedly obstructed and wayfinding is tiring e.g., market, busy car park

Level 5: Traffic-paced places where infrastructure supports crossing decisions e.g. traffic lights, islands, chicanes, crossing guards, zebras

Level 6: Traffic-paced places where the traveller must judge when it is safe to cross the road, e.g., mid-block priority roads, or places where traffic ignores the road rules

¹ Deverell L. O&M environmental complexity scale. *International Journal of Orientation & Mobility* 2011;4(1):64-77.

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|--|---|---|
| OMO Orientation & Mobility Outcomes Part A: Observed Travel Client: Assessor: Date: Starting time: Daylight: bright/sunny grey/dusk dark/night Mode: Observation or Interview only | Stable, familiar conditions; no hurry e.g., home, local block | Dynamic conditions; timeliness needed e.g., road crossings, shops, crowds |
| | Venue/s: _____ Highest ECS: 1 2 3 4 5 6 Aids: NA SG D LC SC ID PC MWC Sc MG GPS Ph Other: | Venue/s: _____ Highest ECS: 1 2 3 4 5 6 Aids: NA SG D LC SC ID PC MWC Sc MG GPS Ph Other: |

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|--|--|----|----|
| SCORING 3 = Elite skills Graceful, fluent, safe & effective in most places 2 = Competent skills Safe & effective, but not always graceful & fluent 1 = Basic skills Limited effective skills; needing consolidation 0 = Beginner skills Unsafe/inadequate for the context | Getting your bearings Where am I? Which way do I go? | /3 | /3 |
| | Checking groundplane What's underfoot? Is it safe to step out? | /3 | /3 |
| | Wayfinding Is this the path? Is anything in the way? | /3 | /3 |
| | Recognising moving parts Is there traffic? Who is around? Do I seek or avoid them? | /3 | /3 |
| | Finding things What am I looking for? How do I find it? | /3 | /3 |

ECS=O&M Environmental Complexity Scale: 1=uninhabited level; 2=uninhabited steps obstacles;3=pedestrian-paced clear; 4=pedestrian-paced crowded; 5=traffic controlled; 6=traffic uncontrolled. Aids: NA=No aid; SG=sighted guide; dog=dog guide; LC=long cane; SC=support cane; ID=identification cane; PC=power chair; MWC=manual wheelchair; Sc=motorised mobility scooter; MG=miniguide; GPS=global positioning system (e.g. Trekker Breeze); Ph=phone

| OMO Part B Wellbeing | Score according to discussion about skills, attitudes and activities within the past month | Comments & Score |
|--|---|------------------|
| Activities (engagement) | 0 I find activities overwhelming or boring 1 My mix of activities is not quite right, but I don't know how to fix it, or I'm not yet ready for change 2 I like some of my activities, but I'm ready for new directions 3 I'm satisfied with my current mix of activities 4 I find my mix of activities interesting and enriching | /4 |
| Connections | 0 I am isolated and lonely much of the time; it is hard to connect with others 1 People do things for me, but I have little to offer 2 I know where to go to find people; I link in with people or groups sometimes 3 I meet with people regularly; I feel welcome and included 4 I have mutual friendships; we're there for each other; I contribute | /4 |
| Life-space | 0 I'm house-bound; I rarely go beyond the front gate 1 I do routine travel, only in well-known local areas (e.g., home block, local shops) 2 I explore in my local community; I like to try different routes 3 I travel to known places beyond the local community (e.g. work, school, visiting friends) 4 I like to explore beyond the local community, discovering new places | /4 |
| Orientation | 0 Even at home, I get disorientated; I have trouble understanding shapes, angles and distances 1 I can find the way at home by myself; beyond home, I need a companion or I get lost 2 I travel alone beyond home; if I get anxious or lost, I rely on help from other people 3 I travel alone beyond home; if I get anxious or lost, I can usually work it out by myself 4 I can go anywhere independently; I use mental mapping and I don't really get lost | /4 |
| Self-determination | 0 My travel is managed by other people; I don't make the decisions 1 I need travel restrictions – I'm not always aware of what's safe and what is not 2 I'm aware of my own limitations, but I limit my travel rather than learning new skills 3 I'm aware of my own limitations; I plan ahead; I get information and help with my travel skills 4 I'm in charge; I evaluate my travel and learn from experience as I go; I develop my own skills | /4 |
| Comments <div style="text-align: right; margin-top: 20px;"> Part A: ____/30 Part B: ____/20 Total Score: ____/50 </div> | | |

| VROOM: Vision-Related Outcomes in O&M Part A: Observed Travel Client: Assessor: Date: Starting time: Daylight: bright/sunny grey/dusk dark/night Mode: Observed Interview only | | Stable, familiar conditions; no hurry e.g., home, local block | Dynamic conditions; timeliness needed e.g., road crossings, shops, crowds |
|--|--|---|---|
| SCORING 3 = Vision is primary Looks without hesitation; no touch or aid is needed to confirm vision 2 = Vision needs back-up Rely on vision; some hesitation; use non-visual strategies to confirm 1 = Vision is secondary Rely on non-visual strategies; vision is sometimes useful 0 = Vision is useless Use non-visual strategies | | Getting your bearings Where am I? Which way do I go? /3 | Venue/s: _____ Highest ECS: 1 2 3 4 5 6 Aids: NA SG D LC SC ID PC MWC Sc MG GPS Ph Other: /3 |
| Checking groundplane What's underfoot? Is it safe to step out? | | /3 | /3 |
| Wayfinding Is this the path? Is anything in the way? | | /3 | /3 |
| Recognising moving parts Is there traffic? Who is around? Do I seek or avoid them? | | /3 | /3 |
| Finding things What am I looking for? How do I find it? | | /3 | /3 |
| ECS=O&M Environmental Complexity Scale: 1=uninhabited level; 2=uninhabited steps obstacles; 3=pedestrian-paced clear; 4=pedestrian-paced crowded; 5=traffic controlled; 6=traffic uncontrolled. Aids: NA=No aid; SG=sighted guide; dog=dog guide; LC=long cane; SC=support cane; ID=identification cane; PC=power chair; MWC=manual wheelchair; Sc=motorised mobility scooter; MG=miniguide; GPS=global positioning system (e.g. Trekker Breeze); Ph=phone | | | |

| VROOM Part B Wellbeing | Score together from observations and discussion about activities within the past month | Comments & Score |
|--|--|-----------------------------|
| Reading (acuity) | 0 I have no useful vision for recognising objects or reading text 1 If I'm close enough, I can identify large signs (eg, STOP) by text, size, shape, or colour 2 I can sometimes see a favourite toy, or read signs, or vehicle number plates 3 I can distinguish between products, looking at text or packaging (eg, shampoo/conditioner) 4 I can identify tiny things (eg, Lego blocks) or read regular print (eg, letters, N12) | /4 |
| Visual certainty (reliability) | 0 My vision is never useful when I'm moving around; too little, too late 1 I can't rely on my vision when I'm doing things 2 My vision causes hesitation; it undermines my confidence when I'm moving 3 My vision has its limitations, but I know how to work with it 4 My vision is reliable for travel; I don't have to think about it much | /4 |
| Mobility aids (beyond home) | 0 I use non-visual skills (guide/cane/dog) beyond home – my vision is useless 1 I rely on my guide/cane/dog beyond home – vision provides some extra information 2 I use a guide, cane or dog with my low vision – the need can vary in different conditions 3 I can go without, but a mobility aid gives confidence, relieves fatigue, expands my options 4 My vision is good enough for travel – I don't need a mobility aid | /4 |
| People | 0 I can't see people's shapes or movement; or see if a conversation partner moves away 1 I can see a body moving past, but I can't tell who it is; I sometimes collide 2 I can recognise people by their shape, colours, size or gait; I usually avoid collisions 3 I can see faces, but not details; I do miss some social cues 4 I can recognise faces, read facial expressions and social cues | /4 |
| Pleasure | 0 My vision is un-motivating; it rarely or never prompts a closer look 1 My vision is frustrating, often more trouble than it is worth 2 My vision is useful for some things, but not for others 3 I can see interesting things; it is usually worth the time it takes to look 4 I can see engaging things that give me joy | /4 |
| Comments <div style="text-align: right; margin-top: 20px;"> Part A: ____/30 Part B: ____/20 Total Score: ____/50 </div> | | |