

Supplementary appendix 1. Derivation of questions in initial Back Pain Attitudes Questionnaire (Back-PAQ)

#	Text	Derivation	Direction	Rationale	Theme
THESE QUESTIONS ARE ABOUT YOUR OWN BACK					
1	Your back is one of the strongest parts of your body	C ¹	R	Relates to the theme that the back is a vulnerable structure which is easy to injure. A true response would indicate a positive belief about the strength of the back	Vuln
2	Your back is well designed for the way you use it in daily life	Q	R	A number of participants expressed beliefs that the back is not designed for sitting or being upright, or that its design/function mean that it is overloaded/overused, resulting in more frequent injury. A true response would indicate a positive belief about the design of the back	Vuln
3	Bending is good for your back	Q	R	Relates to activities which participants thought were dangerous for the back. The majority of participants thought that bending was bad for the back	Vuln
4	Sitting is bad for your back	Q	F	Relates to activities which participants thought were dangerous for the back. The majority of participants thought that sitting was unhelpful for the back in one way or another. The adverb 'prolonged' was intentionally not included in order to focus on the activity, rather than the load (length of time). Prolonged is also very open to interpretation (i.e. how long is prolonged?)	Vuln
5	Lifting without bending the knees is not safe for your back	Q	F	Relates to activities which participants thought were dangerous for the back. Virtually all participants (including GPs) felt that lifting with the spine flexed was dangerous and injurious. This item also relates to a Back Pain Myth (number 4 – ' <i>Most back pain is caused by injuries or heavy lifting</i> ') proposed by Deyo ² and included in the Ihaelebaek ³ survey. This item was re-phrased to focus just on the dangers of lifting, rather than also attempting to ask about the relationship between pain and injury. It also includes all lifting rather than just focussing on heavy lifting; this is to make the item about the action of lifting itself, rather than the back's ability to accept load (a number of participants thought lifting was dangerous regardless of the load). This phrasing also removes the need for participants to interpret how heavy 'heavy' is	Vuln
6	It is easy to injure your back	Q	F	Relates to the vulnerability of the back, as evidenced by how easily it is injured. This item is analogous to the TSK item 9 – ' <i>I am afraid that I might injure myself accidentally</i> ' ⁴ ; however, it focuses more upon perceptions of the back as being a weak/vulnerable structure that is easy to injure, than fear of accidents	Vuln

#	Text	Derivat- ion	Direct- ion	Rationale	Theme
THESE QUESTIONS ARE ABOUT LOOKING AFTER YOUR OWN BACK					
7	It is important to have strong muscles to support your back	Q	F	Relates to the need to protect the back expressed by many participants, and the role of muscles in doing this	Protect
8	Good posture is important to protect your back	Q	F	Relates to the need to protect the back, and the role of posture in achieving this	Protect
9	If you overuse your back it will wear out	Q	F	Acute LBP participants felt that the back is used for a large proportion of activities, and that this resulted in overuse and eventual degeneration. Similarly many chronic LBP participants thought that they had worn out their back by overusing/misusing it, and this was the reason for their chronic pain	Vuln
10	If an activity or movement causes back pain, you should avoid it in the future	Q	F	Relates to the theme of protecting the back by avoiding activities which are perceived as having caused injury in the past. It also relates to pain representing injury as this underpins why participants may assume that the activity is dangerous. This explores the avoidance aspect of the <i>'If you have back pain you should not do physical activities which (might) make the pain worse'</i> item from the FABQ if the bracketed 'might' is not included. ⁵	Protect
11	You could injure your back if you are not careful	Q	F	Relates to the need to protect the back. The wording strongly reflects that which was used by participants	Protect
12	You can injure your back and only become aware of the injury sometime later	Q	F	Relates to the vulnerability of the back (i.e. it is so easy to injure that you may not even notice when you are doing it), but also to the prejudice against the back, with it being so untrustworthy that it might not even inform the owner while it is being damaged, only to cause subsequent problems which are un-fixable. A number of participants expressed a belief that they had injured their back without knowing it, only for the pain to appear later. Again this has parallels with TSK item 9 – <i>'I am afraid that I might injure myself accidentally'</i> , ⁴ but looks more specifically the idea of accidental injury while performing a normal activity rather than injury during an accident (i.e. the crashing of your car)	Vuln

#	Text	Derivat- ion	Direct- ion	Rationale	Theme
THESE QUESTIONS ARE ABOUT BACK PAIN IN GENERAL					
13	Back pain means that you have injured your back	Q	F	Relates to the theme that pain represents injury. It is similar to TSK item 7 – ' <i>Pain always means I have injured my body</i> '. ⁴ It has been made it specific to the back and the word 'always' has been removed. Some qualitative interview participants, who thought that pain was normally or usually representative of injury, were unsure of how to answer the TSK item due to being able to identify situations where pain does not represent injury (i.e. headache)	Pain
14	A twinge in your back may be the first sign of a serious injury	Q	F	Relates to the vulnerability of the back, negative thoughts about the back, and catastrophic interpretations of mild noxious stimulus. A number of participants discussed how they had very negative thoughts the moment they felt 'something' in their back	Vuln
15	Thoughts and feelings can influence the intensity of back pain	C ⁶	R	Relates to the theme of pain representing injury. It has been modified from the original item by removing the word 'psychological' to remove the stigma which may be associated with this term for some people. A true response would indicate a belief that pain may be influenced by non-injury factors	Pain
16	Stress in your life (financial, work, relationship) can make back pain worse	Q	R	Relates to the theme of pain representing injury. It aims to explore other psychosocial elements which may influence pain intensity. It supplements item 15	Pain
17	When you have back pain you can do things which increase your pain without harming the back	Q	R	Relates to the theme of pain representing injury. Many participants were uncertain about whether increases in pain represented more injury or just an irritation of an injury which was already there. This item is similar to TSK item 8 – ' <i>just because something aggravates my pain does not mean it is dangerous</i> '. ⁴ The word 'dangerous' was removed as it is very emotive, and was not necessarily analogous with injury in the eyes of many interview participants. A true response would indicate a belief that pain does not necessarily represent injury	Pain
18	Having back pain makes it difficult to enjoy your life	Q	F	Relates to the special nature of back pain. It aims to explore whether back pain is seen as having a particularly large impact upon quality of life	Special

#	Text	Derivation	Direction	Rationale	Theme
19	It is worse to have pain in your back than your arms or legs	Q	F	Relates to the special nature of back pain. A number of participants talked about pain in the back being worse than other areas due to both its severity and impact. Aldrich ⁷ found that participants regarded headache and muscle pains as being an inevitable part of life, and therefore they were less threatening than other pains	Special
20	It is hard to understand what back pain is like if you have never had it yourself	Q	F	Relates to the special nature of back pain. A number of participants (both with acute and chronic LBP), thought that LBP is different to other pains and people cannot understand it unless they have experienced it	Special
THESE QUESTIONS ARE ABOUT WHAT YOU SHOULD DO IF YOU HAVE BACK PAIN					
21	If your back hurts, you should take it easy until the pain goes away	C ³⁶	F	Relates the theme that the back needs to be protected, especially when you have back pain. It was proposed as a back pain myth (number 3) by Deyo ²	Protect
22	If you ignore back pain, you may cause damage to your back	Q	F	Relates to the theme of pain representing injury. Many participants were uncertain about whether increases in pain represented more injury, so this provides a further opportunity to explore this concept. This item is also related to the reason why participants felt they needed to protect their back while in pain. It explores the hurt = harm aspect of the FABQ item ' <i>If you have back pain you should not do physical activities which (might) make the pain worse</i> ' ⁵	Pain
23	It is important to see a health professional when you have back pain	Q	F	Relates to the special nature of back pain. It investigates respondent beliefs about their own ability to manage back pain, as opposed to it requiring expert opinion/assistance. This theme was strongly represented within the qualitative interviews. The item leaves the reason for seeing a HCP open to interpretation as participants' reason for requiring the opinion varied between needing the right treatment to get better, finding out how bad it is, preventing future problems, et cetera	Special
24	To effectively treat back pain you need to know exactly what is wrong	Q	F	Relates to the special nature of back pain. A number of participants expressed a belief expressed that a diagnosis was necessary to allow appropriate treatment. It is related to the item from Goubert ⁶ – 'Everyone with back pain should have a spine x-ray or imaging test', but is more directed at the reason why people may believe that they need imaging	Special

#	Text	Derivation	Direction	Rationale	Theme
25	If you have back pain you should avoid exercise	C ¹	F	Relates to the risk:benefit analysis which participants made. Many participants thought that they should stay active, but equated this to gentle walking, as opposed to physical exercise which was viewed as being more risky. It is similar to item 27 about remaining active, but extends it to exercise.	Activity
26	When you have back pain the risks of vigorous exercise outweigh the benefits	Q	F	More clearly relates to the views expressed by the participants with acute LBP than comparator item 25; participants felt that some level of activity was probably good, but actual physical exertion was too dangerous, they also used a risk:benefit framework they used for making this judgement. This item also more clearly indicates that it is referring to physical exercise, rather than all exercise, which could include activities such as gentle walking	Activity
27	If you have back pain you should try to stay active	C ⁸	R	Relates primarily to activity participation while experiencing LBP. However, it also relates to the protection theme as many participants thought that activity is important to prevent the deleterious effects for rest, maintain muscle strength et cetera. A true response would indicate a belief being active is better than resting	Activity

THESE QUESTIONS ARE ABOUT RECOVERING FROM BACK PAIN

28	Most back pain settles quickly, at least enough to get on with normal activities	C ¹	R	Relates to the prognosis theme, and the uncertainty which many acute LBP participants expressed about the outlook for an episode of LBP. A true response would indicate a positive outlook for back pain	Prog
29	Worrying about your back can delay recovery from back pain	Q	R	Relates to the theme of pain representing injury. Some participants discussed the ability of thoughts to impact upon recovery from back pain. A true response would indicate a belief that non-physical/injury factors can influence the recovery from back pain	Pain
30	Focusing on things other than your back helps you to recover from back pain	Q	R	Relates to the pain representing injury theme. Some participants discussed the use of distraction as a way to manage LBP. In order to do this someone would need to make a judgement that the pain was not useful, i.e. not necessary to protect damaged tissue. It is similar to item 29, but relates to something positive which people can do, rather than something they should not do. A true response would indicate a belief that non-physical approaches can aid recovery from back pain	Pain

#	Text	Derivation	Direction	Rationale	Theme
31	Expecting your back pain to get better helps you to recover from back pain	Q	R	Relates to the pain representing injury theme. Some acute LBP participants who had previous experiences of LBP expressed an expectation that the current episode would also resolve, and this was helpful for them. A true response would indicate a belief that non-physical approaches can aid recovery from back pain	Pain
32	Once you have had back pain there is always a weakness	C ^{9,10}	F	Relates to the prognosis theme. Many acute LBP participants expressed uncertainty about whether their back could heal, while many chronic LBP participants were certain that the back does not heal. It also relates to the belief that the spine is vulnerable, especially following a previous injury	Prog
33	There is a high chance that an episode of back pain will not resolve	Q	F	Relates to the prognosis theme, and the uncertain/negative outlook which many participants expressed for LBP	Prog
34	Once you have a back problem, there is not a lot you can do about it	Q	F	Relates to the prognosis theme and the uncertain/negative outlook which many participants expressed for LBP. The wording of this item draws directly from one of the participants. This item relates to two items from the BBQ – ‘there is no real treatment for back trouble’ and ‘doctors cannot do anything for back trouble’, ⁹ however it personalises it to the person completing the questionnaire and broadens the scope beyond just what HCPs or doctors can do for back pain	Prog

Key: # = item number; C = comparator item; Q = item derived from qualitative analysis; R = reverse scored; F = forward scored; Vuln = ‘the vulnerability of the back’; Protect = ‘the need to be protect the back’; Pain = ‘the correlation between pain and injury’; Special = ‘the special nature of back pain’; Activity = ‘activity participation while experiencing back pain’; Prog = ‘the prognosis of back pain’; TSK = Tampa Scale of Kinesiophobia; FABQ = Fear Avoidance Beliefs Questionnaire; BBQ = Back Beliefs Questionnaire; GP = general practitioner; LBP = low back pain; HCP = health care professional.

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