



# WHEN WE TEST, DO WE STRESS ?

## GUIDELINES FOR HEALTH PROFESSIONALS AND SCIENTISTS WORKING WITH OLDER ADULTS



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CENTRE FOR STUDIES  
ON HUMAN STRESS  
(CSHS)



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# The Centre for Studies on Human Stress

The Centre for Studies on Human Stress (CSHS) is dedicated to improving the physical and mental health of Canadians by empowering individuals with scientifically grounded information on the effects of stress on the brain and body.

CSHS **strives to increase knowledge** on the effects of stress on physical and mental health, through state-of-the-art scientific research, to improve the health status of Canadians.

CSHS also **serves as a reference centre** for scientists, educators, and clinicians performing interventions aimed at reducing stress in children and/or families, and for those who wish to evaluate the physiological and/or cognitive effectiveness of their intervention.

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# When we Test, Do we Stress?

## THE STRESS RESPONSE

Twenty years of studies on human stress have shown that when individuals are exposed to a stressful situation, they produce stress hormones that access the brain and impair memory performance.

## WHAT IS STRESS?

There are 4 characteristics in a situation that induce a stress response:

- 1) Novelty
- 2) Unpredictability
- 3) Threat to one's ego
- 4) Sense of low control

Exposure to these 4 factors can lead to increased stress hormones which can access the brain and lead to memory impairments<sup>1</sup>.

These factors are present in many of the environments and procedures used to test older adults' memory performance.

## STRESSFUL TESTING ENVIRONMENTS

Studies on memory and aging consistently show that older adults perform much worse than young adults on memory tests. Such a difference in performance is assumed to be a natural outcome of the aging process.

Interestingly, a close look at the testing environment in which older and young adults are tested reveals that older adults may be tested in stressful unfavorable environments, while young adults are tested in more favorable environments<sup>1</sup>.

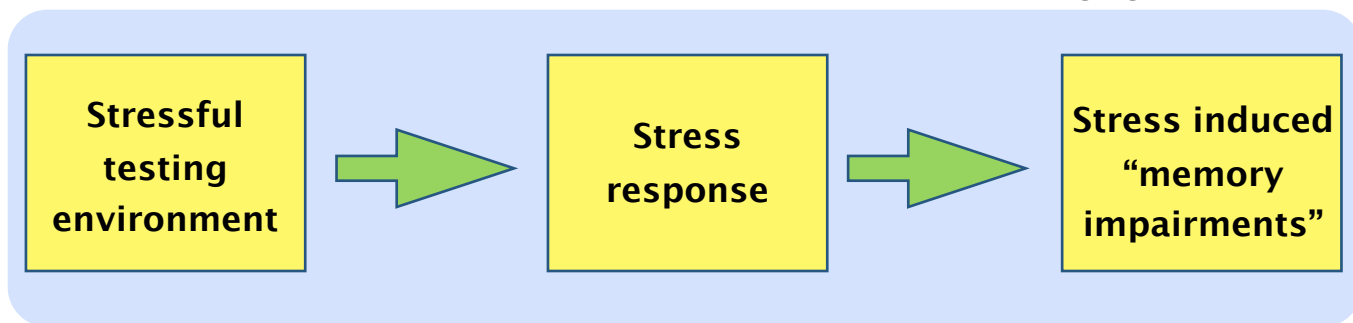


**Research Setting:** In research studies, older adults have to find their way to an unfamiliar university campus (which is novel and unpredictable). They are instructed to perform a novel memorization task<sup>2</sup>. Additionally, their cognitive capacities are tested by a student who may be their grand-child's age (this can be threatening to their ego). Appointments are scheduled during inconvenient hours of the day for older adults (for which they have low sense of control)<sup>3-6</sup>.



**The Centre for Studies on Human Stress (CSHS)** conducted a study, carried out by Shireen Sindi (Ph.D. Candidate), which found that when older adults are tested in stressful testing environments, their stress hormone levels are elevated, which in turn has a negative impact on their memory performance<sup>7</sup>. The study provided evidence for the effects of testing environments in research settings.

Considering that older adults are tested in stressful environments, this may induce a stress response that artificially leads to memory impairments in this age group.



**Clinical Setting:** Based on these intriguing results, our curiosity set in to assess whether the same conclusion would apply to clinics, and to learn more about the factors that deem medical settings stressful for older adults.

Members of the CSHS organized a focus group with older adults, which provided them with an opportunity to speak out. As such, we developed a Knowledge Translation program. Its goals were to: a) gather further information on stressful factors in clinical testing environments. This was conducted through focus groups held with older adults, b) ask researchers, clinicians and health professionals working with older adults to provide suggestions/solutions for the reported stressors.

# OLDER ADULTS REPORT THEIR STRESSORS



## When We Test, Do We Stress?

Since having memory performance tested in scientific studies can be stressful for older adults, it is probable that being evaluated in medical settings is also stressful, leading to spurious ‘age-related memory impairments’.

Medical appointments can be stressful for all of us, but they can be especially difficult for older adults. The objective of the focus group was to provide a platform for older adults to share their thoughts and opinions on their experiences in medical environments; the doctors, the hospitals, the medical tests, and to determine what stresses them.

To obtain this information, a focus group was conducted and a questionnaire on factors that cause stress in medical/clinical settings was distributed. The questionnaire measured older adults’ stress levels on 25 items related to medical appointments. The rating scale was from 1 to 10 where 1=not stressful

at all, and 10=extremely stressful. The current document displays the findings from the focus group and the questionnaire.

Reported stressful factors have been divided into 6 categories that allow for easier analysis and discussion of the data.

The categories are:

Stress associated with...

1. Pre-Appointment Period
2. Transportation
3. Time of Appointment / Season
4. Medical Environment
5. The Health Professional
6. Medical Exam & Diagnosis

### GENERAL STATISTICS of participants:

- 86 participants
- Mean age = 62 years
- 78% women



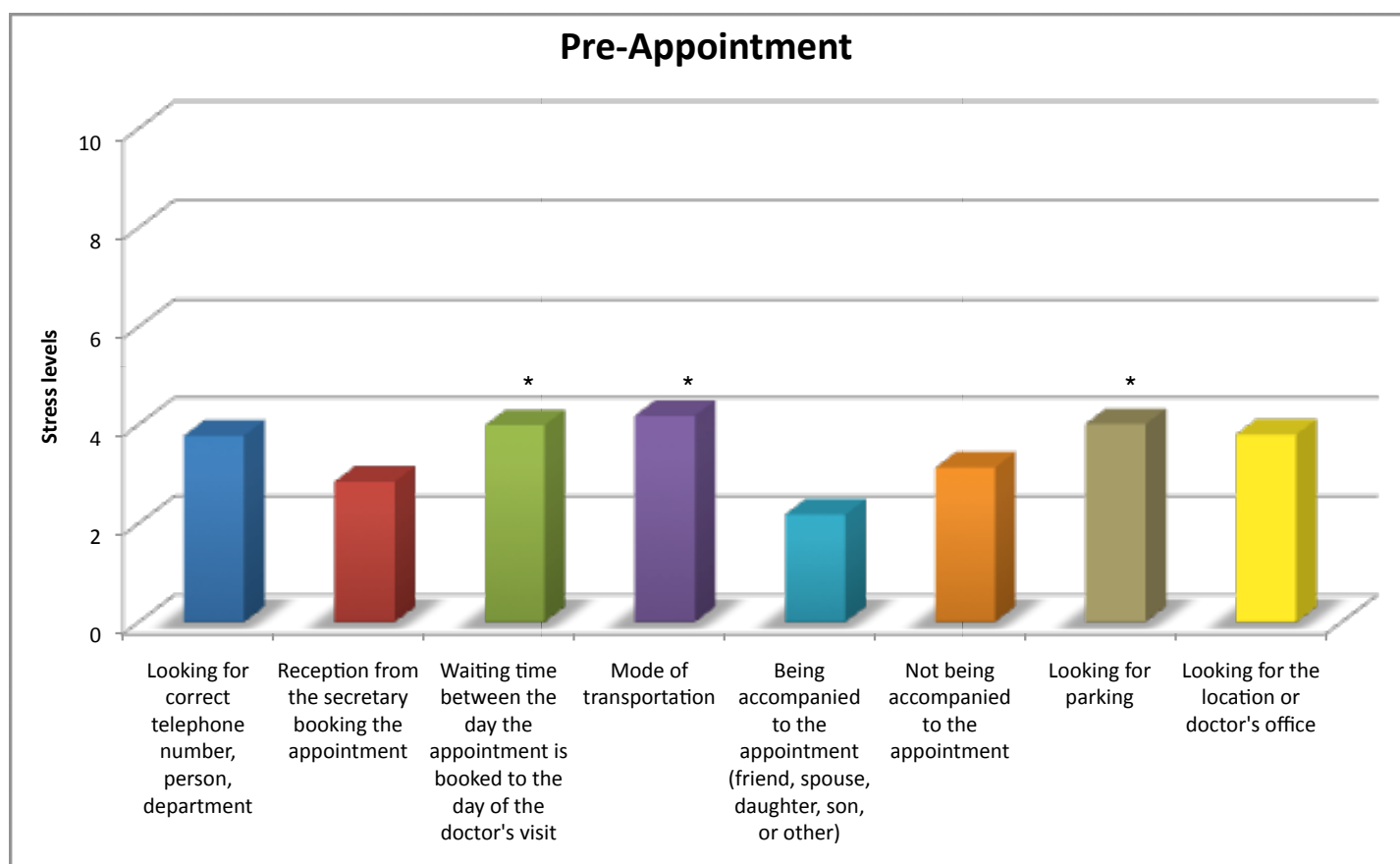
# STRESS ASSOCIATED WITH...

## Pre-appointment period

The stressors associated with medical appointments often start prior to one's arrival at the clinic. Many stressful factors are associated with booking an appointment, finding a doctor or getting to the appointment location. In the questionnaire, we asked participants to answer 8 questions regarding the stress associated with booking an appointment, being accompanied to the visit, waiting time, and having to find parking and the exact department.

Older adults reported that the most stressful factors are having to wait for appointments, getting to the clinic and looking for parking. They also reported that looking for the doctor's office and finding the correct contact information can be stressful.

During the focus groups, older adults' discussions supported their reports on the questionnaires.



## Older adults speak out:

**Family doctor** – Many older adults do not have a family doctor. *“it is difficult to know where to go for medical assistance and how to find a doctor”.*

**Accompaniment** – Not having someone to accompany older adults to appointments and medical exams can be stressful. *“It would be nice to be accompanied by someone, even if it’s a volunteer, and not a family member.”*

**Finding the location** – When older adults arrive at a hospital, they are often unfamiliar with the area and need to find parking. Once they enter the hospital, they then need to find the restrooms and the location of the appointment

**Long waits** – Waiting for the doctor & waiting for appointments. *“We would much rather talk to receptionists and not have answering machines give us instructions.”*

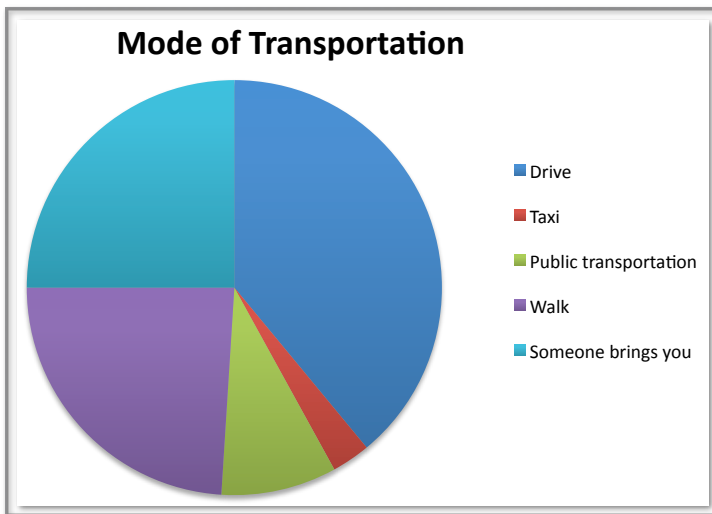


# Transportation

Different modes of transportation have advantages and inconveniences for older adults. We were interested in finding out the most common methods of transport that older adults used to get to their medical appointment. The questionnaires showed that driving is the most common

method, followed by walking or having someone take them to their appointment.

From the figure below, 39% of the participants drive to appointments, 24% walk and 25% are accompanied by someone. Only 9% use public transportation, and 3% use taxi services.



*"It would be very helpful if secretaries can give us clear instructions on how to get there."*

## Older adults speak out:

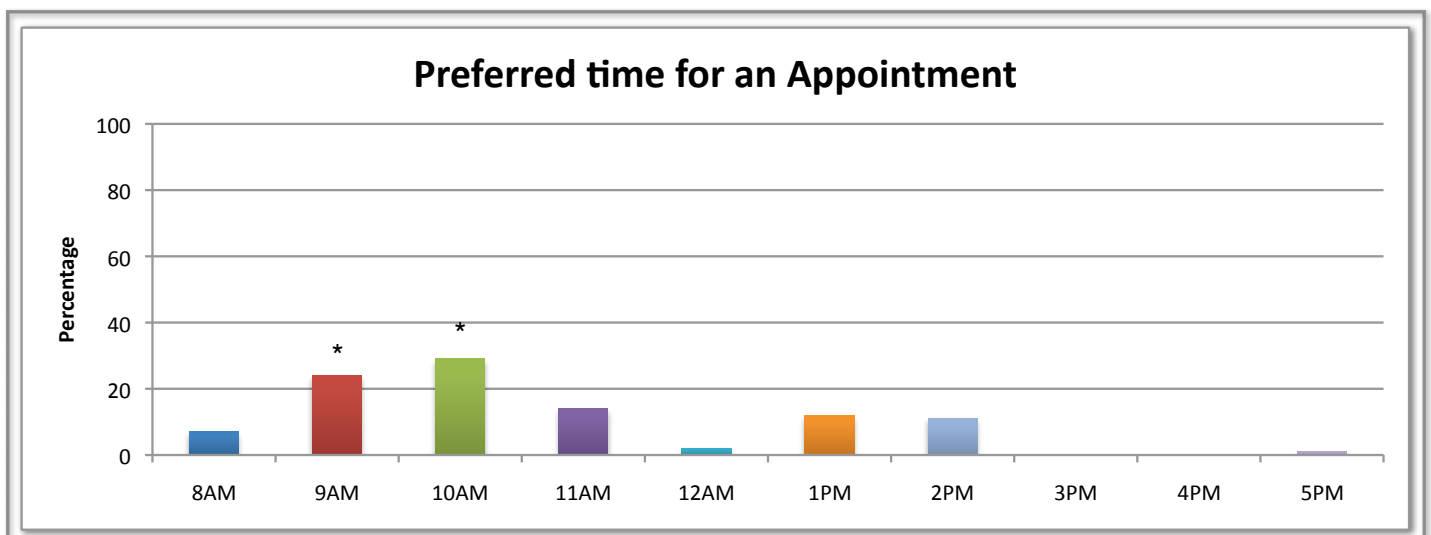
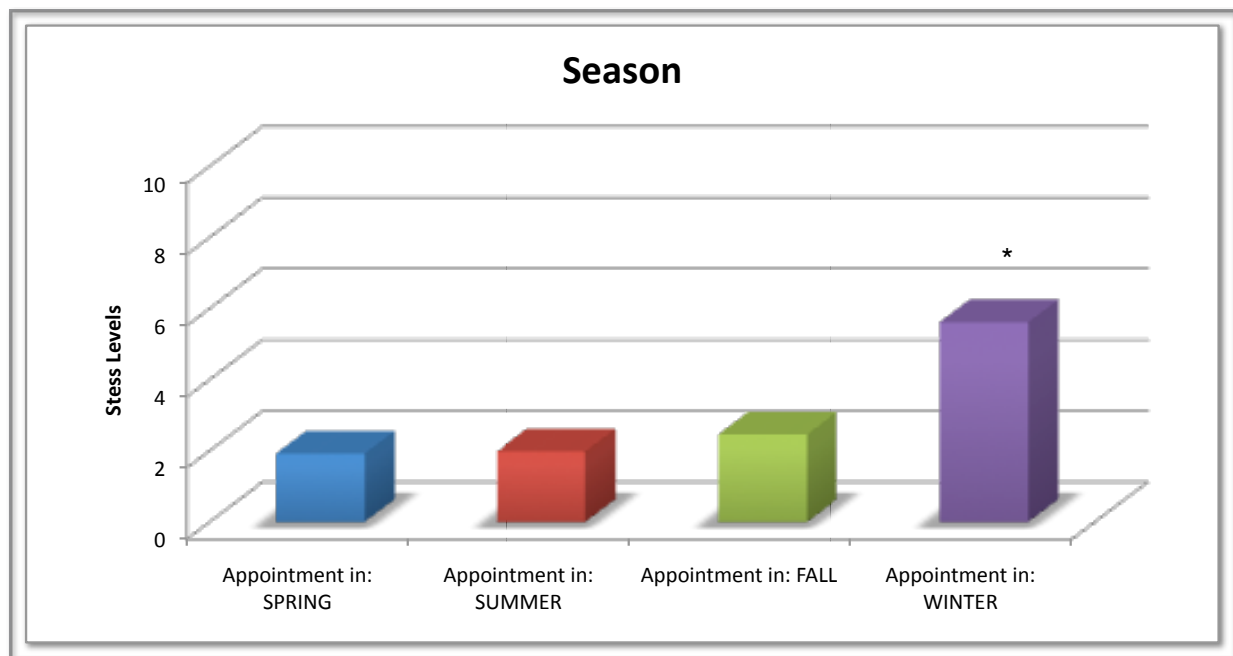
**Public transportation** – *"Using public transport can be very stressful and uncomfortable, especially with infants crying, no seats available and really loud noises."*

**Parking** – When older adults arrive at a hospital, they are not familiar with the area and find that parking can be extremely challenging. *"The cost of parking can be incredibly high, sometimes up to \$15".*



# Time of Appointment / Season

Evidence shows that older adults tend to wake up early and perform better at cognitive tasks when carried out in the morning, when compared to the afternoon. We were, therefore, interested in finding out when older adults prefer to have their medical appointments. Additionally, we were curious about whether they had any preferences for particular seasons of the year. We found that older adults prefer to have appointments around 9 or 10 AM. Medical appointments in winter is quite stressful for this age group.







### Older adults speak out:

**Time of appointment** – The findings from the questionnaire show that older adults prefer appointments in the AM rather than the PM. A stress factor is *“not being able to have an appointment at a convenient time.”*

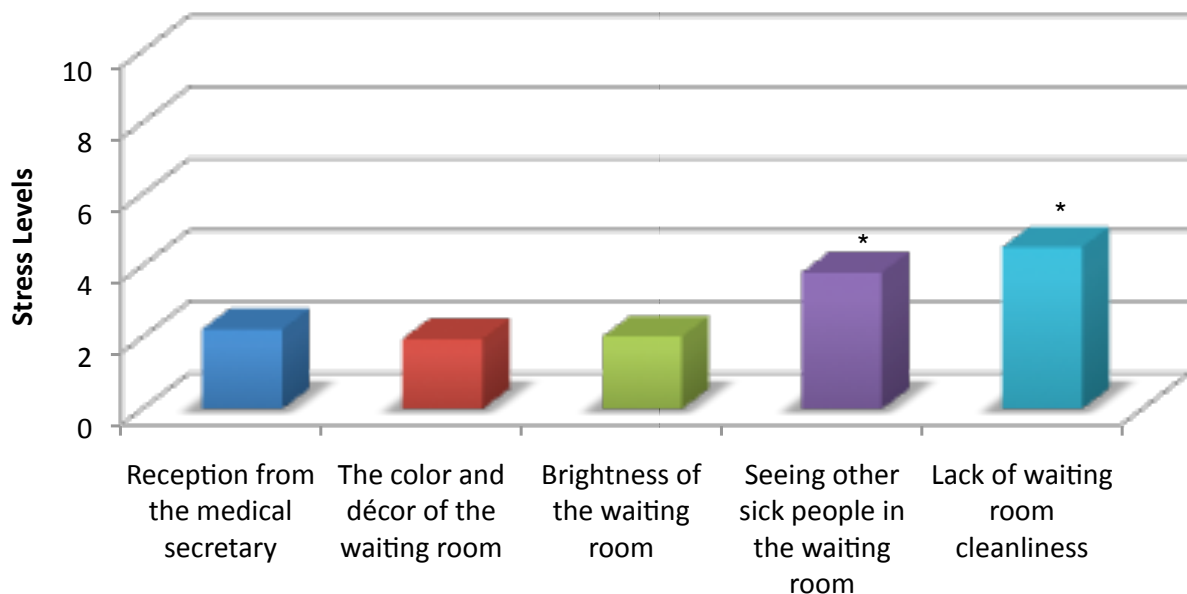
**Season of appointment** – Older adults are adamant about the stress associated with the season of the appointment. *“Winter is the most difficult season to get around, especially when the sidewalks are not cleared and there’s a higher risk of falls.”*

# Medical Environment

We asked older adults about whether certain features of the medical environment itself can be stressful for them. These included the reception from the secretary, seeing other ill individuals in the waiting room, and the color, brightness and cleanliness of the waiting room. The 2 most important stressful factors were related to cleanliness and seeing other sick people.



## Medical Environment







### **Older adults speak out:**

The medical environment is a source of stress for many older adults.

**Over-crowding** – Waiting rooms are often over-crowded.

**Anxiety** – The fear of catching germs and illness in hospitals can be stressful.

**Comfort** – Sometimes older adults are expected to undergo tests in very uncomfortable conditions. *“During MRI scans, one is asked to change into outfits that leave them feeling very cold”.*

**Waiting** – The waiting time to see a doctor, or in waiting rooms can be very long and tiresome. *“When I have to wait for too long before an appointment, my blood pressure increases.”*

# The Health Professional

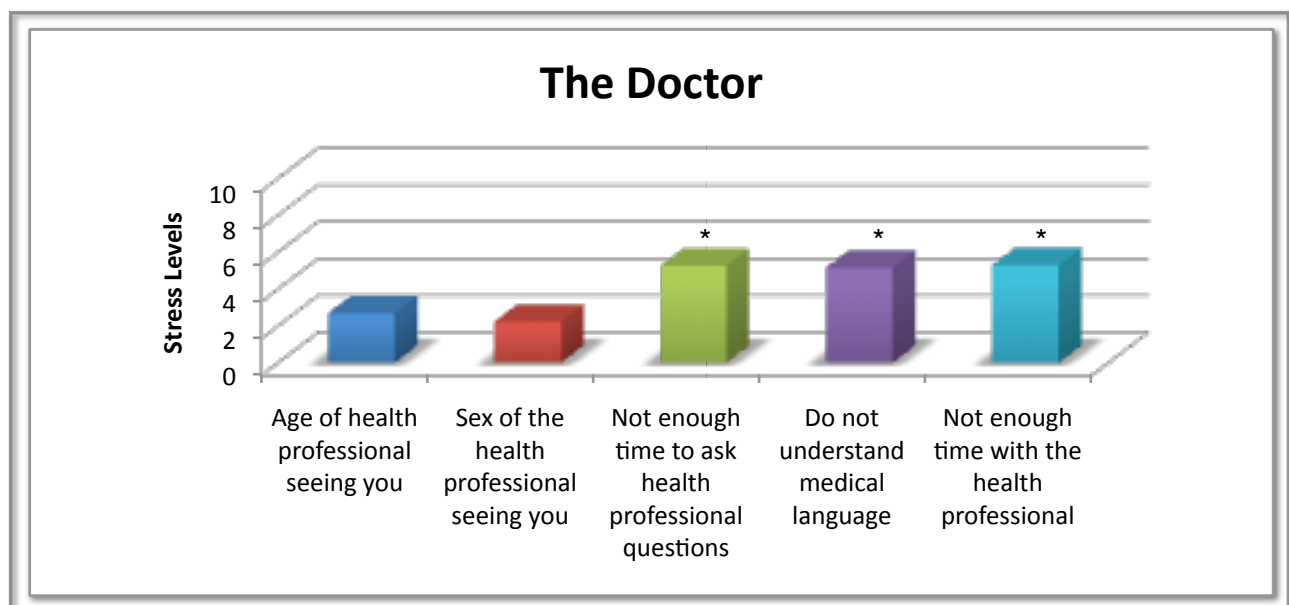


*“Seeing a new doctor for the first time can be quite stressful.”*

We were interested in the characteristics of the health professional deemed stressful by older adults. We asked them questions about the professional's characteristics (eg. age and sex), and other questions more closely related to the quality of the relationship (having

enough time to ask questions and engaging in clear communication).

Their responses revealed that the quality of the relationship was considered more important than the professional's age and sex.



# The Health Professional

## Older adults speak out:

**Lack of consideration**– Older adults express that they would like for members of their age group to be treated as human beings and not simply as numbers.

**Characteristics of the doctor** – Older adults find that younger doctors are more humane with members of their age group, when compared to older doctors. They prefer female doctors over male doctors as *“female doctors are more humane. Men are generally more rushed.”* They mention that doctors’ personalities and attitudes can really make a difference. Some are more friendly, while others are brisk.

**Medical terminology** – Older adults express the difficulty in understanding medical terms used by health professionals.

**Hearing difficulties** – Many older adults have hearing difficulties, so when doctors do not articulate well, it can be difficult to hear and understand what they are saying.

**No time to ask questions** – Older adults express the lack of time to ask doctors questions, as they are constantly rushed.

*“Since we are rushed during appointments, the only way we can think of questions to ask is by writing them down in advance.”*

*“We understand that doctors are obliged to see a certain number of patients per day, however, if a nurse can be present after the appointment, that would give us an opportunity to ask questions and obtain clarifications, and it would be very reassuring.”*

**Lack of sufficient time to complete tests** – When undergoing tests (for example at the optometrist), older adults attest that *“we are expected to perform the tests so rapidly that we do not even have a sufficient amount of time to respond correctly.”*

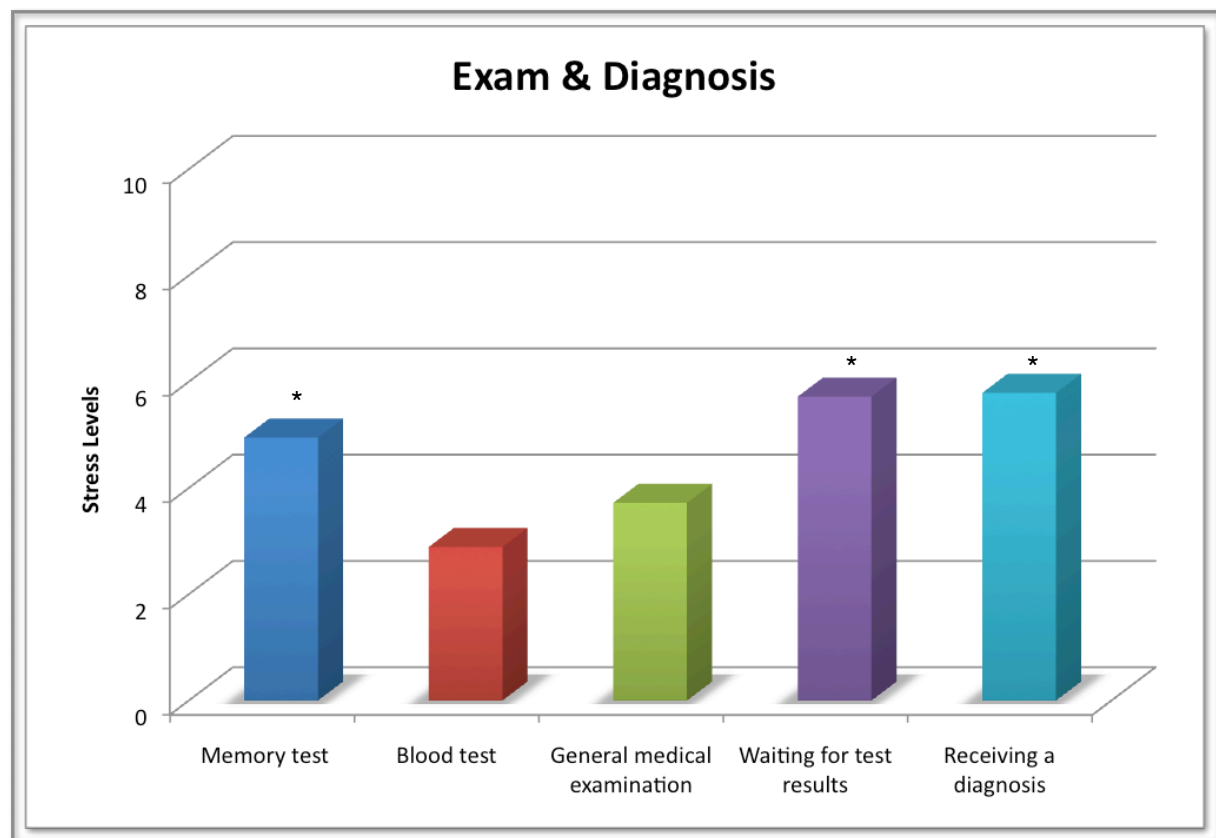
*“When we are stressed and anxious during our appointment, we are not able to accurately explain our symptoms.”*

**Difficulty understanding medical terminology** – Older adults would like to have medical conditions explained to them at a reasonably slow pace, and with the use of comprehensible language and terms.

**Appointments with specialists** – If doctors have contacts with specialists, older adults would appreciate it if their doctor can facilitate obtaining an appointment. They would also like to understand why they need to see a specialist.

# Medical Exam & Diagnosis

Based on the questionnaire, the figure below indicates that receiving a diagnosis and waiting for test results are quite stressful for older adults. Interestingly, performing memory tests are deemed even more stressful than undergoing blood tests and general examinations.







### Older adults speak out:

**Receiving a diagnosis** – When a doctor diagnoses a patient with a serious illness, older adults emphasize the importance of having the condition/illness patiently explained to them in a clear and slow manner. *“We rarely receive clear explanations of the procedures and steps that will follow an initial diagnosis.”*

**Conflicting opinion among doctors** – *“When two doctors have very contradictory opinions or suggestions, this causes a lot of distress as it is difficult to know which of them is right”.*

**Pharmacists** – Older adults believe that pharmacists should be able to prescribe medications, at least for minor conditions, as it would decrease the wait- time and would allow for quicker treatment of symptoms, which would prevent the condition from worsening.

*“Doctors often scare patients by mentioning the word “cancer”, when in fact some forms are treatable.”*

**Follow-up after exam:***“Even if results are negative, it would be appreciated if we can receive a phone call to inform us. That would be very reassuring.”*

**VIDEO LINK:** For video clips of older adults speaking out, please visit the “When We Test, Do We Stress?” link: [www.humanstress.ca](http://www.humanstress.ca)

# CLINICIANS & SCIENTISTS PROPOSE SOLUTIONS



During the first focus group, older adults reported different factors considered stressful for them, whether before, during or after medical appointments. With this valuable information, we organized a second focus group with health professionals, with the goal of obtaining recommendations on how to decrease older adults' stress based on older adults' comments.

The health professionals working with older adults varied in terms of both the populations they worked with and the types of medical environments in which they practiced. They included geriatricians, general physicians, psychologists, neurologists, neuropsychologists, nurses, research assistants and graduate students among others.

There was a general awareness and consensus that many stressors start long before the medical appointment itself, and are maintained for months after. These include factors related to booking the appointment, getting to the appointment location and waiting for results. It also became evident that while medical doctors and clinicians can address older adults' concerns and dampen their stress levels, a broader range of professionals can also play an important role in decreasing older adults' perceived stress. These include secretaries, technicians and assistants.

The following suggestions are presented in the following categories of stressors reported by older adults:

- **Pre-Appointment Period**
- **Transportation**
- **Time / Season of Appointment**
- **Medical Environment**
- **Health Professional**
- **Medical Exam & Diagnosis**



# WHEN WE TEST, LET'S NOT STRESS SOLUTIONS TO DECREASE STRESS ASSOCIATED WITH...

## Pre-Appointment Period

### A) Booking appointments

**Clinicians & Researchers suggest to...**

#### **CLINICAL & RESEARCH SETTINGS:**

- Decrease the delay between the date when the appointment is scheduled and the appointment itself. Provide a contact number where further information can be obtained during this wait time.
- Inform older adults where they are on the waiting list, and give an approximate wait time for their appointment.
- Call older adults prior to the appointment to gather information regarding their mobility to make arrangements regarding appropriate vehicles / equipment.
- After an appointment, conduct a follow-up with the older adult, to address concerns and provide reassurance when possible.



- Take into consideration where the older adult will be commuting from when booking the appointment.

#### **RESEARCH SETTINGS:**

- Schedule to meet older adults outside the research centre / hospital entrance, as this will:
  - a) Prevent the discomfort related to stigma associated with certain medical departments (such as mental health), and the fear of being in contact with other patients.
  - b) Prevent wandering and getting lost in the hospital.

## B) Arriving at the hospital/research centre

Between the time when older adults arrive and the medical appointment itself, older adults can be quite stressed by the novelty of the medical environment and not knowing what to expect. A few simple steps can be taken to decrease their stress and make them more comfortable with the environment.

### CLINICAL & RESEARCH SETTINGS:

- Since older adults usually show up earlier than their appointment time, it would be good to have someone meet them.
- Provide older adults with manuals on upcoming examinations/procedures and what they entail (for example, what is a neuropsychological exam, or a MRI (Magnetic Resonance Imaging)).

### RESEARCH SETTINGS:

- Mention to research participants that no other participants are scheduled immediately after them, so they do not feel rushed.



## Transportation

Older adults tend to structure their daily routine around places they are familiar with. Having to take an unfamiliar mode of transport to a new environment can be stressful. The following are suggestions from clinicians and scientists working with older adults on how transport-related stress can be decreased:

### CLINICAL SETTINGS:

- If possible, ask older adults if they would like a volunteer to accompany them to their medical visit.
- Adapted transportation – ensure that older adults know who to contact for transport arrangements.
- Depending on the mode of transport that will be used, provide clear detailed instructions on how to get to the hospital/clinic.

### RESEARCH SETTINGS:

- Provide a parking coupon or cover the cost of a taxi, if possible.





## Time / Season of Appointment

Being tested at an inconvenient time or in winter is stressful for older adults. An awareness of these factors is important, and giving a choice when possible can decrease older adults' stress levels and help them to perform better and provide more accurate results.

### CLINICAL & RESEARCH SETTINGS:

- Tailor testing time according to older adults' convenience.

Example: To prevent transport-related stress, encourage multiple tests during the same visit as long as fatigue does not impact performance (ex. cognitive tests).

- Give older adults a choice regarding their appointment time.



## Medical Environment

Before meeting the medical doctor or clinician, older adults interact with secretaries, assistants and nurses. These professionals have the capacity of playing a very important role in making older adults feel comfortable and decrease their stress levels prior to their medical appointment.

### CLINICAL & RESEARCH SETTINGS:

- Provide receptionists and medical secretaries with psycho-education on how scheduling appointments can be stressful for older adults, and ways of helping to decrease their stress ([give them this “When We Test, Do We Stress?” guideline!](#)).
- Create a relaxing and welcoming atmosphere in the waiting room (Ex. having an aquarium, a bowl of fruits, tea, coffee).
- Secretaries should a) familiarize older adults with the environment & show them where the washrooms are located. b) inform them of the approximate waiting time until they see the doctor.
- Know the names of older adults’ as they arrive.
- Use hand soap in testing rooms, antibacterial wipes and towels, as the fear of catching germs can be stressful for older adults.



## Health Professionals

Health professionals are faced with the challenge of having to see many patients within short periods of time, and cannot spend as much time as they would like with each patient. In return, older adults have reported feeling rushed, with little or no time to ask questions, which is stressful for them. Once they leave the clinic, they tend to have many questions that come to mind, with nowhere to seek answers until their next visit, possibly months later. The clinicians in our focus group provided suggestions for alternatives and solutions that can be utilized, even by health professionals who are short on time.

### CLINICAL & RESEARCH SETTINGS:

- Provide nurses with training so that they can contribute to providing information to patients regarding their appointments, procedures involved, and follow-ups.
- Take the time to get to know older adults prior to the medical examination. This makes the older adult more comfortable and is informative to the health professional (Ex. ask about their daily life/home environment).
- Be sensitive to your own levels of stress in order to avoid the effects of stress spillover on the patient. For example, when stressed, a professional can ask a colleague for guidance or take a walk to decrease their stress.
- If the health professional has no choice but to be rushed, he/she can ask the older adult to remind him/her to slow down if necessary.
- Provide feedback to older adults regarding their performance on medical and cognitive exams.





### RESEARCH SETTINGS:

- If the research assistant testing is young, this can create stress among older adults who may perceive a “lack of experience”. It is, therefore, important to emphasize the professional side/experience to decrease their stress levels.
- Hire an older research assistant to test older adults.
- To increase motivation during memory tests, use simpler tasks first . It is advisable to start with memory tasks.
- Strengthen the relationship with research participants by sending greeting cards annually.
- Research assistants should receive adequate & tailored training.



## Medical Exam & Diagnosis

Being given a diagnosis can be extremely stressful, which can decrease older adults' capacity to pay attention and retain what is being said. Below are a few suggestions for technicians, health professionals and nurses that can aid in decreasing the associated stress and provide helpful resources.

### CLINICAL & RESEARCH SETTINGS:

- Being accompanied during an announcement of results / diagnosis is important, as the stress may impair an older adult's capacities to encode during the appointment.
- If possible, advise older adults to bring along a tape recorder so they can later allow family members to listen to what the doctor has said. This will allow them to better understand the condition.
- Encourage families to get involved and to use suggested resources.
- Recommend support groups (particularly helpful for caregivers).
- Validate what the person has understood regarding upcoming medical exams & procedures.
- To increase motivation during memory tests, use simpler tasks first and it is advisable to start with memory task.



# NUTS ANALYSIS of stressors and solutions



In our collected data on medical-related stressors reported by older adults, for each category of stressors (pre-appointment, the medical environment health professional, medical exams and diagnoses), we were interested in finding out which of the NUTS (**N**ovelty, **U**npredictability, **T**hreat to Ego, **S**ense of low control) components cause older adults most distress. Additionally, we were interested in whether suggestions provided by clinicians target the appropriate NUTS factor.

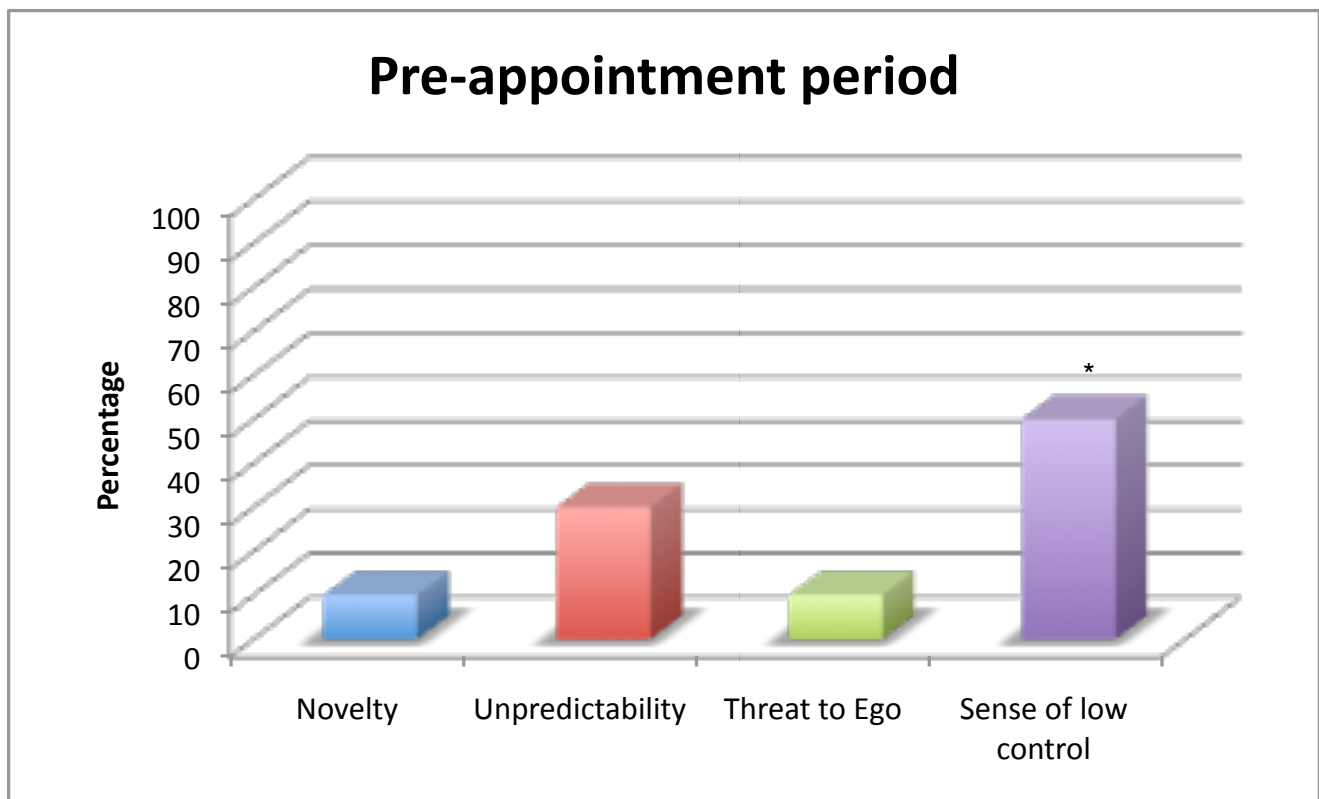
For each stressful factor reported by older adults, a different sample of older adults rated the stressor according to the significance of the NUTS factor involved. For each of the stressors, the older adult was asked to select one of the four NUTS factors that caused it to be stressful. (Example: For the stressor = *Receiving a diagnosis from a clinician*. Which of the NUTS factor caused this to be stressful? Novelty, Unpredictability, Threat to Ego or Sense of a lack of control).

# NUTS ANALYSIS of stressors and solutions

As shown in the graphs below, it is interesting to observe which of the NUTS factors are most important for older adults within each of the stressor categories. These can allow clinicians to keep in mind which components' to address when attempting to decrease older adults' stress response.

## Pre-appointment period

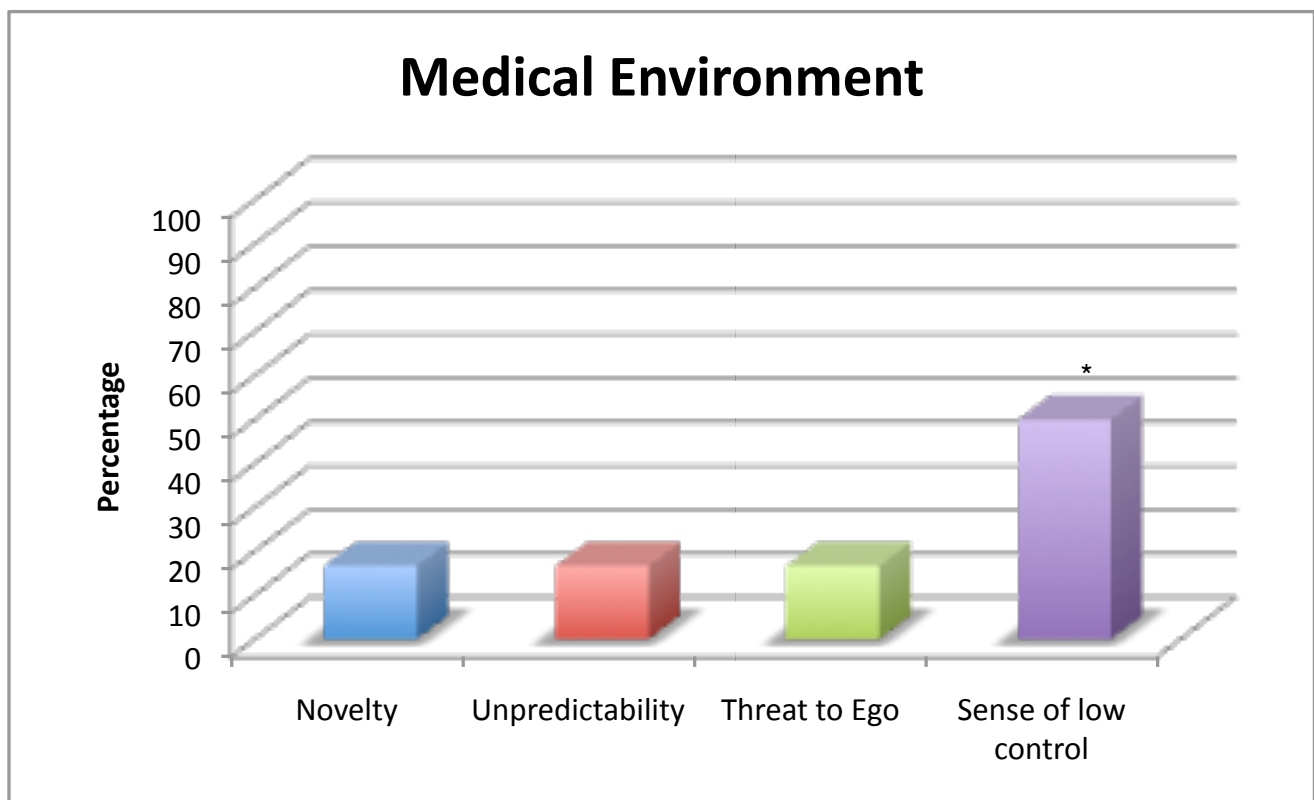
For pre-appointment stressors, most of the stressors reported by older adults involve a ***sense of low control***. These are related to finding their way to the hospital, finding parking, long waits for appointments, looking for contact numbers, among others. Clinicians and scientists' suggestions show an understanding of these stressors, as they generally attempt to increase older adults' sense of control.



# NUTS ANALYSIS of stressors and solutions

## Medical Environment

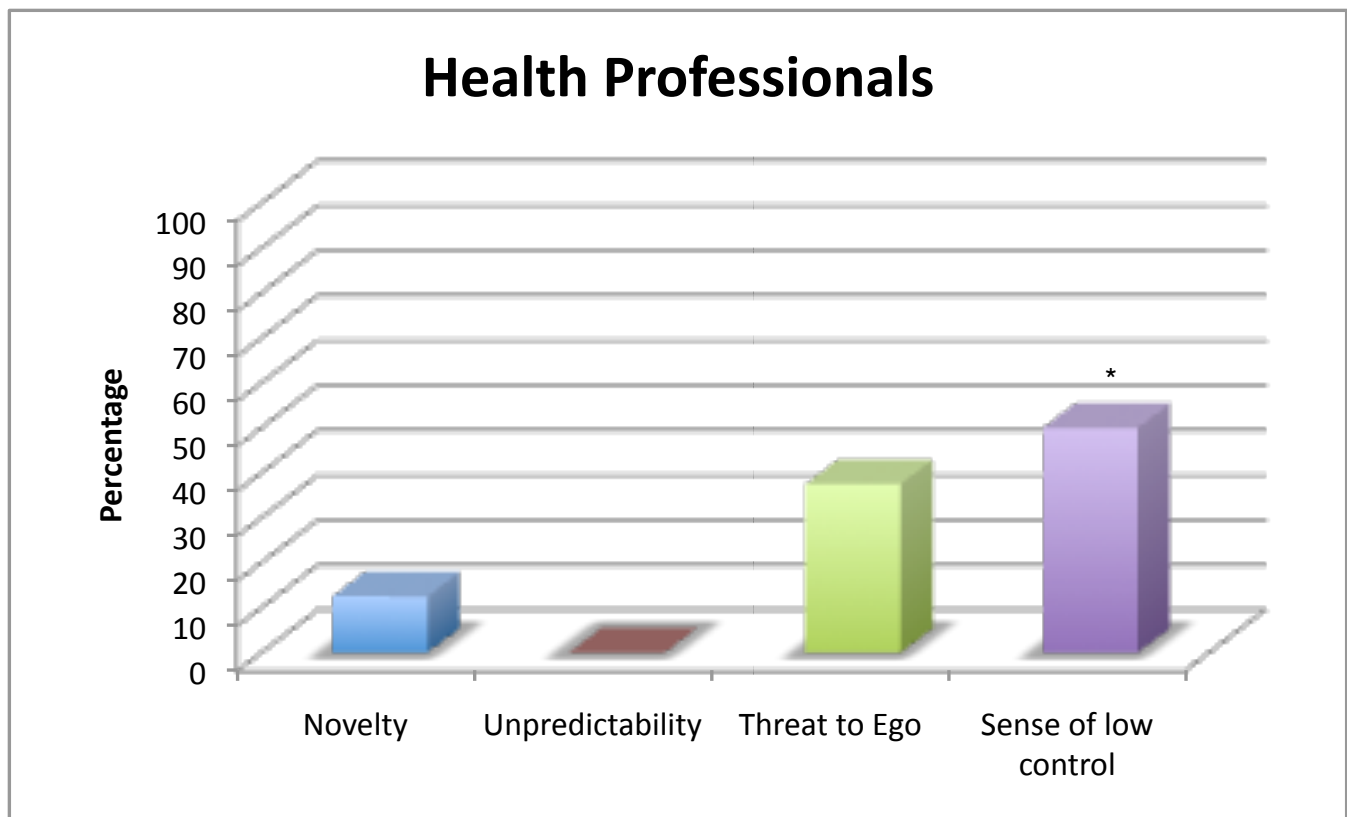
For the medical environment, most stressors for older adults also appear to be due to the ***sense of low control*** they have with their surroundings. For example, they find the rooms uncomfortable, they see sick people around them, and they have long waits for their appointments. Interestingly, although clinicians' suggestions are useful in giving older adults an increased sense of control of their environment, clinicians additionally attempt to provide advice to decrease their perceived threat to their ego. Although the latter is important, it will be essential for clinicians to be aware that with regards to the medical environment, increasing older adults' sense of control may yield most effective outcomes.



# NUTS ANALYSIS of stressors and solutions

## Health Professionals

Regarding the health professional, one of the most important NUTS factors reported by older adults is a **sense of low control** related to not being able to hear or understand clearly, receiving too little information about their condition, and an insufficient amount of time to ask questions and feeling rushed when performing exams. Clinicians understand the decreased sense of control associated with these stressors and make suggestions that would offer older adults a higher sense of control. They also understand how a sense of lack of consideration from health professionals is associated with a threat to the ego, and they appropriately address this stressor. However, regarding the difficulty in understanding medical terms, or having enough time with the health professional, clinicians assume that a threat to the ego is associated with these stressors, when in fact older adults report that the associated novelty and unpredictability stresses them.

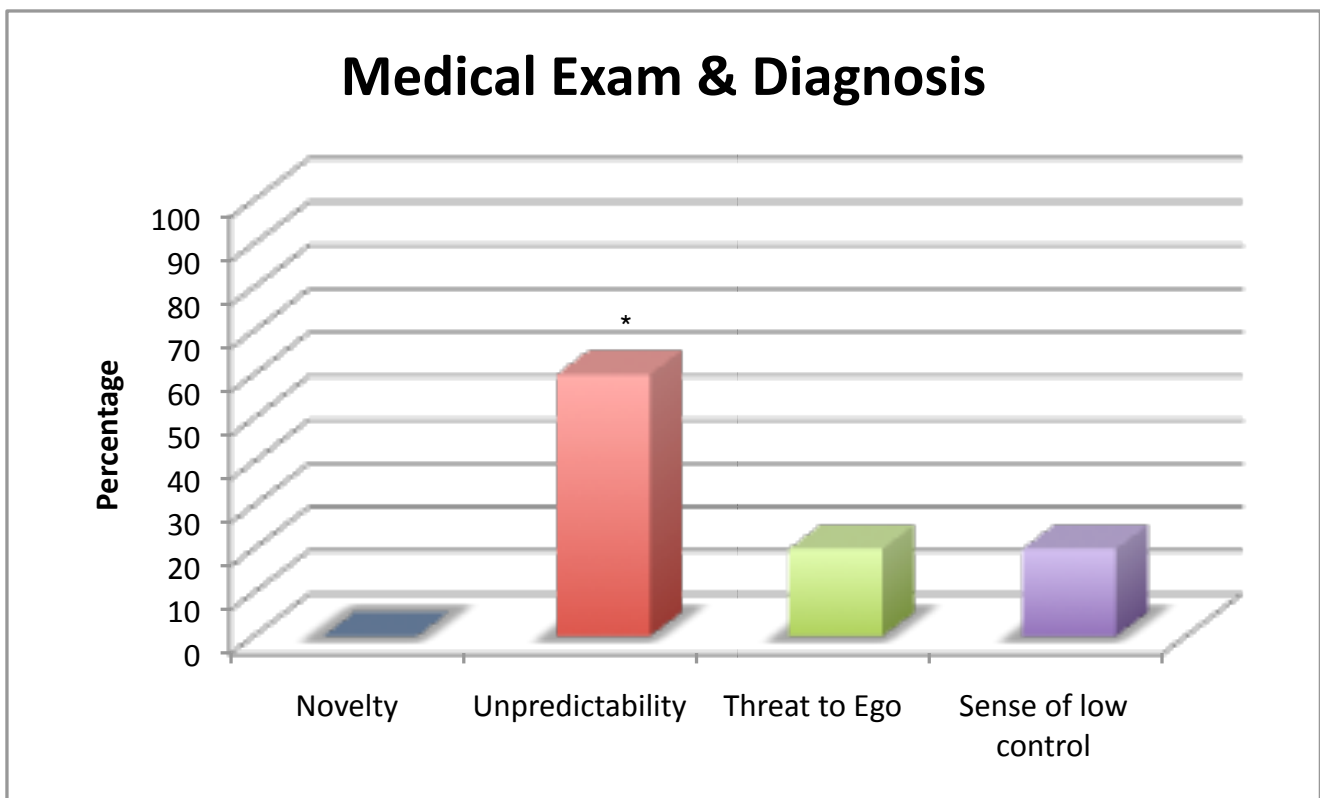




# NUTS ANALYSIS of stressors and solutions

## Medical Exam & Diagnosis

Finally, with regards to diagnoses, clinicians' suggestions appropriately target the stressors. There is an understanding that the most stressful NUTS factor is **unpredictability**, which is associated with receiving a diagnosis, not having an explanation of why they need to see a specialist, waiting for tests results, and encountering conflicting opinions from different health professionals. Clinicians attempt to target these stressors. There is also an understanding among clinicians that undergoing a memory test can be threatening to older adults' ego. Not only do clinicians attempt to decrease the threat to their ego, but they also try to decrease the novelty and unpredictability of performing such exams.





## CONCLUSION

It is clear that an ideal world free of stressful factors cannot be attained. The medical environment is not likely to change radically over night. However, when minor considerations are taken into account, this can result in older adults being at ease with lower levels of distress induced by the idea of medical tests and exams.

By tailoring testing and medical environments to make them more favorable for older adults, their decreased stress levels can allow them to pay better attention to instructions and guidance, improve their compliance with treatments and would provide clinicians and scientists with more accurate and representative exam results, which are not confounded by elevated stress.

For more information on “When we Test, Do we Stress? – Knowledge Translation initiative”, please visit LINK: [www.humanstress.ca](http://www.humanstress.ca)

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