MORE DEAD THAN DEAD? ATTRIBUTING MENTALITY TO VEGETATIVE STATE PATIENTS

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Forthcoming, *Philosophical Psychology* [accepted 2015]

In a recent paper, Gray, Knickman and Wegner (2011) present three experiments which they take to show that people perceive patients in a persistent vegetative state (PVS) to have less mentality than the dead. Following on from Gomes and Parrott (2014), we provide evidence to show that participants' responses in the initial experiments are an artefact of the questions posed. Results from two experiments show that, once the questions have been clarified, people do not ascribe more mental capacity to the dead than to PVS patients. There is no reason to think that people perceive PVS patients as more dead than dead.

Keywords: Mind perception; Dualism; Persistent Vegetative State (PVS).

1. Introduction

A patient in a vegetative state is one who 'appears at times to be wakeful, with cycles of eye closure and eye opening resembling those of sleep and waking. However… there is no evidence that the patient can perceive the environment or his/her own body, communicate with others, or form intentions.' (Royal College of Physicians 2003, p.1). Someone in such a condition, though clearly alive from a biological perspective, exhibits only minimal signs of mental functioning. Since the patient is unable to communicate in any way, others are frequently asked to determine the

course of medical treatment on her behalf.[1] In many cases, the choice to maintain or terminate medical intervention is disputed. In part this is because the precise level of mentality of someone in a persistent vegetative state is not well-understood (cf. Owen and Coleman, 2008). This places pressure on policy-makers and bioethicists to better understand not only the science of the persistent vegetative state, but also public attitudes towards persistent vegetative state (Gipson, Kahane and Savulescu 2014). How do we view the mental life of such patients? How and when do we ascribe mental states or capacities to them? The answers to these questions can inform legal and ethical thinking about our responsibilities to PVS patients.

In a recent paper, Gray, Knickman and Wegner (2011) defend the following claims: that people perceive patients in a persistent vegetative state (PVS) as having less mental capacity than the dead; and that this is explained by the presence of implicit afterlife beliefs or implicit dualistic thinking. In Gomes and Parrott (2014) we criticised each of these claims. We argued, first, that the experimental data do not support the claim that people perceive patients in PVS to have less mental capacity than the dead, and, second, that even if people perceive patients in PVS to have less mental capacity than the dead, there is a better explanation for these judgements which doesn't turn on ascribing to people implicit afterlife beliefs or implicit dualistic thinking.

Our arguments were largely based on theoretical considerations. In this paper we experimentally explore the claim that people perceive PVS patients as having less mental capacity than the dead. We report the results of two independent studies. The first focuses on the presentation of the data in Gray et al. (2011). Gray et al. report data that seem to show that people ascribe significantly more mentality to the dead than to patients in PVS. By slightly varying their experimental design, our first study suggests that these results may be partially the result of a confounding variable.

The experiments in our first study follow Gray et. al. in using participants' responses to fictional vignettes as a way of determining how people think

[1] Some recent evidence suggests that at least some vegetative patients (including one PVS patient) can answer 'yes/no' questions by engaging in certain forms of imaginative activity (Monti, et. al. 2010; Fernandez Espejo and Owen 2013). It is not clear yet what to make of these results, nor is it straightforward to determine what implications they have for our moral obligations to vegetative patients (for discussion see Kahane and Savulescu 2009). For the moment, the decision about how to treat PVS patients remains with others.

about the mental capacities of PVS patients and the dead. But there are complications involved in using people's responses to fictional texts in this way. In particular, it may be that participants' responses to fictional texts are determined as much by the general conventions surrounding the reading of a fictional text as by their views on the matter in hand. We exploit this possibility in our second study to show that the framing of the question affects the responses that people give. Once the questions are appropriately clarified, the effect disappears. This indicates that the data in Gray et. al. (2011) suggesting that people perceive PVS patients to have less mental capacity than the dead is an artefact of the way the original questions were posed.

2. Gray et al. (2011)

Gray et al. (2011) designed three experiments to test people's judgements about the mental capacities of people in a persistent vegetative state when compared both to living people and to the dead. In Experiment 1, participants are given one of three different vignettes describing a fictional character named David who has been in a car accident and either lives, dies, or enters a persistent vegetative state (PVS). Participants are then asked to rate David's mental capacity by indicating on a 7-point scale from 3 to -3, where 3 indicates 'strong agreement' and -3 indicates 'strong disagreement', whether he 'can influence the outcomes of situations', 'has emotions and feelings', 'knows right from wrong', 'is aware of his environment', 'has a personality', and can 'remember the events of his life'. In this experiment, participants reading the PVS vignette gave the lowest rating of mental capacity to David (Life: M = 1.77, SD = 1.02; Death: M = - 0.29; SD = 1.76; GKW PVS M = -1.73, SD = 1.36, (Gray, et. al., 2011)).

In Experiment 2, a corpse vignette was added in order to control for the possibility that 'the dead are conferred more mind because of a reduced bodily focus' (p.277). In this experiment, participants reading the PVS vignette still attributed a lower degree of mental capacity to David than those reading the death vignette. However, a notable result of Experiment 2 is that 'non-religious participants did not ascribe less mind in the PVS condition than in the *corpse* condition.' (p.278)

Experiment 3 differed from the previous two in that participants were given vignettes asking them to imagine that they had been in an

automobile accident and were either dead or in a PVS. In addition to being asked to rate their own mental capacities, participants were also asked to rate on a 7-point scale 'how bad' the outcome would be for them. The PVS outcome was rated to be much worse than death and, as in the previous two experiments, also rated to have the least amount of mental capacity.

Based on the results of these studies, Gray et al. conclude that 'people consistently viewed the persistent vegetative state as something less than dead: they ascribed less mind to people in a PVS (Experiments 1-3) and saw it as worse than death (Experiment 3)' (p.278).

3. PVS and Brain-Destruction

The text which Gray et al. use to test participants' reactions to a person in PVS is as follows:

> David Tuchman grew up in a small city in Ohio. He went to college in Michigan and returned home to Ohio afterwards to work at his family's local business. Shortly after he moved back home, he went out to dinner with some friends from high school at a local restaurant. On his way home from dinner, David's car was struck head on by a truck that swerved across the median. The ambulance arrived very quickly, but there was not much they could do for David. Although David did not die, he entered a Persistent Vegetative State. David's entire brain was destroyed, except for the one part that keeps him breathing. So while his body is still technically "alive," he will never wake up again.

As was pointed out in Gomes and Parrott (2014) this text is misleading in a number of ways. First, the text contains explicit information that is obviously relevant to the question of whether or not David has any mental capacities. Specifically, the vignette tells readers that David's '*entire* brain was destroyed, except for the one part that keeps him breathing'. This information alone could determine one's answer to questions about David's mental capacities, especially if one thinks that functioning brains are *necessary* for sustaining mental capacities. Second, the text uses scare quotes to flag the term "alive". According to standard theories in linguistics, quotation marks encompassing a word indicate non-standard usage (Gutzmann and Stei 2011; Predelli 2003). Non-standard usage is further indicated by the use of the word "technically" (Holmes 1984).

Gray et al. claim they are testing "lay intuitions" about a subject's mental capacities (p.256). But if we want to test lay intuitions, we should not provide a detailed specification of PVS which makes it very unlikely that David has any degree of mentality, especially when such a characterisation of PVS is highly controversial (Shea and Bayne 2010; Owen and Coleman 2008). In our first experiment we follow up on the suggestion presented in Gomes and Parrott (2014) and test people's intuitions about PVS by providing them with a text which does not provide any further information about the nature of PVS.

4. Study 1

a. Procedures.

In this study, we mimic the experiment of Gray et al. (2011) with the addition of a condition that does not define PVS as involving almost-total brain destruction. Participants were given one of the following four vignettes.

> *Life condition*. David Tuchman grew up in a small city in Ohio. He went to college in Michigan and returned home to Ohio afterwards to work at his family's local business. Shortly after he moved back home, he went out to dinner with some friends from high school at a local restaurant. On his way home from dinner, David's car was struck head on by a truck that swerved across the median. David suffered from major injuries including temporary damage to his brain. He was in a coma for a short time but woke up. Now, David is fully recovered. His brain is fully functioning and he has all of the mental capacities of a normal person.

> *Death condition*. David Tuchman grew up in a small city in Ohio. He went to college in Michigan and returned home to Ohio afterwards to work at his family's local business. Shortly after he moved back home, he went out to dinner with some friends from high school at a local restaurant. On his way home from dinner, David's car was struck head on by a truck that swerved across the median. When the ambulance arrived at the scene, there was nothing they could do to save him. David passed away two hours later at the hospital.

> *GKW PVS Condition*. David Tuchman grew up in a small city in Ohio. He went to college in Michigan and returned home to Ohio afterwards to work at his family's local business. Shortly after he moved back home, he went out to dinner with some friends from high school at a local restaurant. On his way home from dinner, David's car was struck

> head on by a truck that swerved across the median. The ambulance arrived very quickly, but there was not much they could do for David. Although David did not die, he entered a Persistent Vegetative State. David's entire brain was destroyed, except for the one part that keeps him breathing. So while his body is still technically "alive," he will never wake up again.
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> *New PVS condition*. David Tuchman grew up in a small city in Ohio. He went to college in Michigan and returned home to Ohio afterwards to work at his family's local business. Shortly after he moved back home, he went out to dinner with some friends from high school at a local restaurant. On his way home from dinner, David's car was struck head on by a truck that swerved across the median. The ambulance arrived very quickly, but there was not much they could do for David. Although David did not die, due to head trauma he entered a Persistent Vegetative State. So while David is still breathing, he will never wake up again.

Participants then rated their agreement with the following series of statements, as used in Gray et al. (2011). Ratings were offered on a scale from -3 to 3, with -3 representing 'strongly disagree,' 3 'strongly agree,' and 0 'neither agree nor disagree.'

[Aware] David is aware of his environment.

[Influence] David can influence the outcomes of situations.

[Emotion] David has emotions and feelings.

[RightWrong] David knows right from wrong.

[Personality] David has a personality.

[Memory] David can remember the events of his life.

Gray et al. (2011) did not measure the religiosity of the participants in their first study. We therefore adopted the methods they used in their second study to measure the religiosity of participants, asking participants to rate their agreement to the following three statements on a scale from -3 to 3, with -3 representing 'strongly disagree,' 3 'strongly agree,' and 0 'neither agree nor disagree.'

There is life after death.

The soul lives on after a person has died.

I am a religious person.

Participants were 205 adults recruited through Amazon's Mechanical Turk. 19 participants failed a comprehension question, or failed to fill out the entire survey, and were excluded from analysis. Of the remaining 186 participants, 78 were female (mean age=33.60).

b. Results.

Following Gray et al. (2011), we averaged responses for each participant to form a mind perception index (Cronbach's α=.929). We then conducted a 4 (State: life, GKW PVS, New PVS, Death) x 2 (Sex: female, male) analysis of variance (ANOVA). This test revealed a main effect of state ($F(3, 185) = 58.11$, $p>.001$), but none for Sex, $F(1, 185) = 2.41$, $p=.122$, and no interaction, $F(3, 185) = .231$, $p=.875$. Fischer's least significant difference tests (LSD) revealed that each condition significantly differed from the others (for each comparison except that between Death and New PVS, $ps<.001$; concerning the difference between Death and New PVS, $p=.018$). Mean mind perception index ratings for the four conditions were as follows: Life (M=2.08, SD=.69), Death (M=.43, SD=1.74), New PVS (M=-.23, SD=1.40), GKW PVS (M=-1.50, SD=1.30).

We computed independent samples t-tests comparing responses to all individual items for Death and for the New PVS condition. We found no significant difference between these conditions regarding these three items: Awareness ($df=87$, $t=1.74$, $p=.085$, New PVS M=-.36, SD=1.89 vs Death M=.36, SD=2.00), Emotion ($df=87$, $t=1.58$, $p=.119$, New PVS M=.45, SD=1.97 vs. Death M=1.16, SD=2.22), and Personality ($df=87$, $t=1.235$, $p=.22$, New PVS M=.55, SD=1.92 vs. Death M=1.09, SD=2.21).

We found a significant difference between conditions regarding the following three items. In the case of Memory ($df=87$, $t=4.157$, $p<.001$, New PVS M=-.89, SD=1.75 vs. Death M=.78, SD=2.01) and Right/Wrong ($df=87$, $t=2.68$, $p=.009$, New PVS M=-.43, SD=1.92 vs. Death M=.69, SD=2.02), the means were significantly higher in the Death condition. But in the case of Influence, the mean was significantly higher in the New PVS condition ($df=87$, $t=2.00$, $p=.049$, New PVS M=-.70, SD=1.82 vs. Death M=-1.47, SD=1.78).

We also checked for correlations between responses to the religiosity questions and to responses to the Death condition. We found that the mind perception index was positively correlated with the first religiosity question ('There is life after death'), r(43)=.357, p=.016, as well as the second religiosity question ('The soul lives on after a person has died'), r(43)=.376, p=.011, but not with the third religiosity question ('I am a religious person'), r(43)=.204, p=.179.

Finally, in order to check whether the mean mind perception index was being driven by the responses of those high in religiosity, we followed the method used in the second study of Gray et al. (2011) and compiled a 'Religiosity Index' by averaging responses to the three questions (Cronbach's α=.888). We split the religiosity index into thirds and ran a 4 (State: Life, GKW PVS, New PVS, Death) x 2 (Religiosity: high, low) analysis of variance (ANOVA), comparing those who answered in the top third of the religiosity index (those high in religiosity) with those who answered in the lower third of the religiosity index (those low religiosity). We found a main effect of state ($F(3, 119) = 29.836$, $p>.001$, partial eta squared .446), a main effect of religiosity ($F(1, 119) = 8.667$, $p=.004$, partial eta squared = .072), but no interaction, ($F(3, 119) = .512$, $p=.675$.

We then conducted t-tests to determine the differences between responses to each state (Death, New PVS, Life, GWK PVS) for both high and low religiosity participants on the mind perception index. For high religiosity participants, we found significant differences between Death and GKW PVS (df=25, t=2.81, p=.009), and between GKW PVS and New PVS (df=37, t=2.03, p=.050), but no significant difference between Death and New PVS (df=24, t=1.35, p=.190). For low religiosity participants, we found significant differences between Death and GKW PVS (df=35, t=3.39, p=.002), and between GKW PVS and New PVS (df=18, t=2.39, p=.028), but no significant difference between Death and New PVS (df=33, t=1.21, p=.237). On the mind perception index, both high and low religiosity participants exhibited the same sensitivity to the states in question.

c. Discussion.

This experiment replicates the results of Gray et al. (2011). But it also shows that when participants are not presented with a misleading

description of PVS, people ascribe more mental functioning to PVS patients than to those who have had their "entire brain… destroyed, except for the one part that keeps [them] breathing". More importantly, the data show a puzzling pattern of responses.

Gray et al. found that for each item measured, participants ascribed significantly less mind to David in the GKW PVS condition than in the Death condition. We replicated this result (all ps>.04). However, the differences between the New PVS condition and the Death condition were not as clear-cut: for some items the differences were insignificant, and for one item (Influence) PVS mentality was significantly higher than Death. This differential pattern of response calls into question the conclusion that "PVS patients are uniformly perceived to have mental functioning less than that of the dead" (p.276). Thus, we conclude that the experiments conducted by Gray et al. (2011) license only the conclusion that those with destroyed brains are uniformly perceived to have less mental functioning than those who are dead.

5. Fictional Timelines

The methodology in the previous experiments relies on measuring participant responses to fictional vignettes. We should therefore expect that conventions surrounding the genre of fiction may affect participants' responses. We argued in Gomes and Parrott (2014) that a complex set of contextually variable parameters determine what readers judge as being true 'according to' the fiction. Indeed, a number of characteristic features of fiction plausibly affect the way people respond to questions concerning a fictional text (Friend 2012). Moreover, there is some empirical evidence that indicates a person's responses to a written text differ significantly depending on whether they believe it to be fiction or non-fiction (Prentice and Gerrig 1999). We suggest that one convention surrounding fiction is particularly relevant to subject responses in the previous experiments.

Fictional stories often represent an extended period of time. Call this the fictional timeline. Within a fictional text, characters are represented as having different attributes at different moments of the fictional timeline. For instance, some questions about a character in a fictional text explicitly specify a precise moment in the fictional timeline which the question concerns. But when a question doesn't specify a particular moment, it is open for respondents to understand the question in different ways. This

will turn out to be important in assessing the data presented in Gray et al. (2011).

An example will help illustrate the phenomenon. Imagine finishing *Anna Karenina* and being asked: does Anna really care for her son? In answering that question, we think back to the characterisation of Anna's relationship with her son; we naturally think of the things she does and whether they can be explained as resulting from her love for him. We can disagree about the answer. But it would be odd to answer 'No' to the question on the basis that Anna dies at the end of the novel, so is therefore incapable of loving anyone. The question doesn't specify that we should assess whether Anna loves her son *at the end of the fictional timeline* – and, in some ways, it would be an odd person who understood it in that way.

The questions presented in Gray et al. (2011) and in our first study are meant to ascertain whether subjects think certain things are true of David *at a particular point in his timeline* – i.e., after his accident. But, like the previous question about Anna, the questions don't specify that. That leaves it open for subjects to interpret the question as concerning some other point or period of the fictional timeline or no determinate point of time at all. Thus, if we want to ensure that participants are interpreting questions in the manner intended, that is as questions concerning a specific point in time, we need to add a focusing clause to the questions, making explicit the point in the fictional timeline which the they concern. We do this in the following experiment.

6. Study 2

a. Procedures.

This study followed the model of study one. Participants were again presented with one of the same four vignettes used in study one and asked to rate their agreement with a series of statements. Ratings were offered on a scale from -3 to 3, with -3 representing 'strongly disagree,' 3 'strongly agree,' and 0 'neither agree nor disagree.' In this study, however, each statement included a focusing clause, clarifying what the item was attempting to measure. In the Life condition, all statements began with the clause 'After his recovery,' followed by the wording used by Gray et al. (2011) and by our study one. In the GKW PVS and the New PVS conditions, all items began with the clause 'After his accident.' In the

Death condition, all items began with the clause 'After his death.' Participants then answered the same religiosity questions as did participants in study one.[2]

Participants were 200 adults recruited through Amazon's Mechanical Turk. 7 participants failed a comprehension question, or failed to fill out the entire survey, and were excluded from analysis. Of the remaining 193 participants, 79 were female (mean age=33.59).

b. Results.

We again averaged responses for each participant to form a mind perception index (Cronbach's α=.969). We then conducted a 4 (State: Life, GKW PVS, New PVS, Death) x 2 (Sex: female, male) analysis of variance (ANOVA). This test revealed a main effect of state ($F(3, 193) = 154.98$, $p>.001$), none for Sex, $F(1, 193) = .619$, $p=.433$, and a significant interaction, $F(3, 193) = 3.702$, $p=.013$. Fischer's least significant difference test (LSD) revealed that Death, GKW PVS, and New PVS differed significantly from Life (all $ps<.001$), and that no other condition differed significantly, although the difference between Death and GKW PVS approached significance ($p=.057$). Mean mind perception index ratings for the four conditions were as follows: Life (M=2.25, SD=.68), Death (M=-1.70, SD=1.54), New PVS (M=-1.68, SD=1.13), GKW PVS (M=-2.12, SD=1.07).

We also conducted independent samples t-tests comparing individual responses to all individual items for the Death and New PVS conditions. We found no significant difference between responses to five of the items (for Right/Wrong, Personality, memory, and Awareness, all $ps>.45$), though there was a trend towards significance for Emotion, with $p=.053$. In that case the mean for the New PVS condition was higher than the mean for the Death condition (-1.21 vs. -1.87, respectively). There was a significant difference in the Influence condition ($df=93$, $t=2.52$, $p=.013$), with the mean higher in the Death condition (-1.55 vs. -2.35 in the New PVS condition).

[2] In there second study, Gray et. al. (2011) do add a sort of focusing clause in the 'Corpse condition' in order to highlight David's death, which does affect the results for non-religious participants. However, they omit similar focusing clauses for the other conditions.

We then checked for correlations between responses to the religiosity questions and responses to the Death condition. We found that the mind perception index was positively correlated with all three questions. For the first religiosity question ('There is life after death'), $r(45)=.651$, $p<.001$; for the second religiosity question ('The soul lives on after a person has died'), $r(45)=.675$, $p<.001$; for the third religiosity question ('I am a religious person'), $r(45)=.327$, $p=.025$.

As above, we followed the method used in the second study of Gray et al. (2011) and compiled a 'Religiosity Index' by averaging responses to the three questions (Cronbach's $\alpha=.922$), comparing those who answered in the top third of the religiosity index (those high in religiosity) with those who answered in the lower third of the religiosity index (those low religiosity). We ran a 4 (State: Life, GKW PVS, New PVS, Death) x 2 (Religiosity: high, low) analysis of variance (ANOVA). We found main effects for State ($F(3, 138) = 150.85$, $p<.001$, partial eta squared = .777), and for Religiosity ($F(1, 138) = 28.86$, $p<.001$, partial eta squared = .182), and a significant interaction ($F3, 138) = 8.10$, $p<.001$, partial eta squared = .157). For high religiosity participants, Fischer's Least Significant Difference test revealed a significant difference between Death and GKW PVS ($p=.007$), but none between Death and New PVS ($p=.082$) and none between GKW PVS and New PVS ($p=.348$). For low religiosity participants, the same test revealed no significant difference between Death, GKW PVS, and New PVS (all $ps>.346$). We also computed the same test with only the high religiosity participants excluded. There was no significant difference between Death, GKW PVS, and New PVS (all $ps>.098$).

Since the means in the Death, GKW PVS and New PVS conditions looked much lower in study two than in study one, we conducted post hoc t-tests between each condition, comparing the means for the mind perception index in study one with the relevant means in study two. There was no significant difference between responses to the Life condition ($p=.237$), but the differences in the other three conditions were significant. For the Death condition, $df=90$, $t=6.24$, $p<.001$. For the New PVS condition, $df=90$, $t=5.49$, $p<.001$. For the GKW PVS condition, $df=101$, $t=2.60$, $p=.011$.

c. Discussion.

The only difference between studies one and two was the addition of a focusing clause in study two. This clause served to clarify the questions by informing participants that they were asking about David after his accident. That the differences between responses to items in studies one and two are significant indicates that there was substantial confusion about what was being asked of participants in the studies conducted by Gray et al. (2011) and in our study one.

It is noteworthy that responses in the Death, GKW PVS and New PVS conditions are all substantially lower once the focusing clause is added than responses to the equivalent items in study one. This suggests that, on the whole, participants judge that mentality is absent in all three cases. Furthermore, the difference between each of these three conditions is not clearly significant and once we discount those high in religiosity – that is, those who *explicitly* think that one's soul persists after death (roughly one third of our participants) – there is no significant difference between the three conditions. Thus, contrary to the claims of Gray et al., our study shows that most people do not ascribe more mentality to the dead than to PVS patients.[3]

7. Conclusions

Gray, Knickman and Wegner (2011) claim that people perceive patients in PVS to have less mental capacity than the dead. We have shown two things. First, that it is mistaken to say that the experiments in Gray et al (2011) show that people uniformly perceive PVS patients to have less mentality than the dead. Instead, the data may be tracking how people perceive those who have had almost their entire brain destroyed. And, second and more importantly, that the pattern of data reported is an artefact of the way the questions are posed and do not track people's genuine views about the mental capacity involved in death and PVS. Once the questions have been clarified, we find no evidence to suggest that people actually perceive PVS patients as more dead than dead.

[3] In Gomes and Parrott (2014), two of us suggested that people are implicit Epicureans – that they think that the dead no longer exist – and that this is why they ascribe less mentality to PVS patients than to the dead. Since study 2 shows that most people do not ascribe less mentality to PVS patients than to the dead, there is no reason to endorse the Epicurean hypothesis.

Acknowledgements

Thanks to the Andrew Mellon Foundation for research support

References

Fernandez Espejo, D. & Owen, A. M. (2013). Detecting awareness after severe brain injury. *Nature Reviews Neuroscience* 14, 801-809.

Friend, S. (2012). Fiction as genre. *Proceedings of the Aristotelian Society* 112 (2pt2), 179-209.

Gipson, J., Kahane, G., and Savulescu, J. (2014). Attitudes of lay people to withdrawal of treatment in brain damaged patients. *Neuroethics* 7, 1-9.

Gomes, A., and Parrott, M. (2014). Epicurean aspects of mental state attributions. *Philosophical Psychology*. doi: 10.1080/09515089.2014.949653

Gray, K., Knickman, A., and Wegner, D. (2011). More dead than dead: Perceptions of persons in the persistent vegetative state. *Cognition* 121, 275-280.

Gutzmann, D., and Stei, E. (2011). How quotation marks what people do with words. *Journal of Pragmatics* 43 (10), 2650–2663.

Holmes, J. (1984). Modifying illocutionary force. *Journal of Pragmatics* 8(3), 345-365.

Kahane, G. and Savulescu, J. (2009). Brain-damaged patients and the moral significance of consciousness. *Journal of Medicine and Philosophy* 34, 6-26.

Monti, MM. Vanhaudenhuyse, A., Coleman, M. R., Boly, M., Pickard, J. D., Tshibanda, J-F. L., Owen, A. M., and Laureys, S. (2010). Willful modulation of brain activity and communication in disorders of consciousness. *New England Journal of Medicine* 362, 579-589.

Owen, A. M. and Coleman, M. (2008). Functional imaging in the vegetative state. *Nature Reviews Neuroscience* 9, 235-243.

Predelli, S. (2003). Scare quotes and their relation to other semantic issues. *Linguistics and Philosophy* 26(1), 1-28.

Royal College of Physicians. The Vegetative State: Guidance on Diagnosis and Management: Report of a Working Party of the Royal College of Physicians. Royal College of Physicians of London. London, 2003.

Shea, N. and Bayne. T. (2010). The vegetative state and the science of consciousness. British Journal for the Philosophy of Science 61(3), 459-484.