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The health implications of apologizing after an adverse event

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Abstract

Australia is working towards a National Open Disclosure Standard in which all adverse incidents are disclosed to patients in all health-care facilities in the country. Among the many good reasons for this approach, one that has not attracted attention is the possibility that disclosure of an adverse incident may moderate its impact on the recovery and general health of patients. In this article, we discuss this perspective with reference to relevant psychological and physiological literature. In the absence of existing research that pursues this specific hypothesis on disclosure and health effects, we called on the extensive evidence that analogous traumatic events can lead to a prolonged state of negative affect and hyperarousal that are deleterious to recovery and health. This state is called ‘unforgiveness’ by some psychologists. Research suggests that unforgiveness can be alleviated if people who feel aggrieved forgive those they blame for the harm. Forgiving is a complex process, but there is evidence that it is promoted by an apologetic response that incorporates expressions of responsibility, regret and intended action. With the exception of responsibility, these components are part of open disclosure as envisaged in the Standard. We conclude that there is preliminary support from the psychological and physiological literature for further investigation of the hypothesis that disclosure can moderate the recovery and health of patients after an adverse incident, provided that the disclosure incorporates an admission of responsibility.

Keywords: adverse events, patient–provider communication/information, disclosure

Introduction

In April 2008, the Australian Health Ministers [1] agreed to work towards the implementation of the National Open Disclosure Standard [2] in all health-care facilities in the country. The Standard requires health-care professionals to provide patients with accurate information about adverse events, the immediate consequences thereof, and about options to remedy the harm suffered by them. Health professionals must further provide patients and their families with a succinct summary of actions that will be taken to avoid future reoccurrences of similar incidents, ongoing support to relevant patients and their families and an expression of regret.

A review of the literature suggests that the disclosure of adverse events was driven by financial concerns that flowed from the so-called litigation crisis [3]. There is some evidence that disclosure after adverse events reduces the likelihood of litigation, and therefore also has economic benefits [4], but the evidence is not very strong and is not consistent [5]. There are, however, many other reasons for disclosing adverse events and apologizing to patients and their families. Most professionals feel a moral obligation to do so when they believe they are responsible for an adverse incident and

patients and their families likewise expect it [6, 7]. Disclosing errors also accords with the ethical expectation that professionals must always communicate honestly with patients in order to allow them an opportunity to make autonomous decisions about their treatment [8, 9]. This is also the legal position, even though there is not currently a legal duty to disclose medical mistakes in Australia as is the case in Canada [10]. Openness about adverse events can also lead to an improvement in the quality of professional services if professionals and health providers examine their mistakes and take steps to prevent such errors in future. This is important as improvement in the quality of health services and the reduction in the risk that adverse events pose to patients in the course of treatment have become important both to professionals and the public.

A potential benefit of open disclosure of adverse events that appears to have been overlooked to date is that it may ameliorate the negative psychological and physiological consequences of the event. The literature on ‘hard news disclosure’, e.g. communication of a cancer diagnosis, provides evidence that effective and honest disclosure impacts positively on patient well-being [11]. It is reasonable to ask whether disclosure of adverse events may, in a similar fashion, moderate the negative impact of an adverse event

on the recovery and general health of patients. The aim of the following discussion is to explore the hypothesis that disclosure of an adverse event to patients will have a beneficial effect on their recovery and health. In the absence of existing research that specifically addresses the psychological–physiological impact of an adverse event on the functioning of patients, we reviewed the literature on psychological and physiological responses to harm, in general, as well as the effects of those responses on recovery and health.

Responses to harm

An adverse event is a stressor and people react to it as they would to any other stressor, with a psychological [12] and physiological stress response [13]. The psychological response consists of cognitive, affective and behavioural facets and the physiological process involves the immediate activation of the autonomic nervous system followed by activation of the HPA axis (hypothalamus, pituitary gland and adrenal cortex).

The physiological characteristics of the stress response are typified by the symptoms and signs associated with sympathetic nervous system responsivity, for instance, increased cardiovascular (e.g. blood pressure and heart rate) and perspiration (skin conductance) activity [14]. The activation of the HPA axis is less immediate and includes the secretion of cortisol, which enhances metabolic activity and elevates the levels of sugar and other nutrients in the blood.

In terms of psychological responses to harmful stressors, at a cognitive level, people usually try to find out what specifically went wrong; how serious it was, why it happened and who or what is to blame [12, 15, 16]. This cognitive investigation continues until the matter is resolved and closure is achieved. Simultaneous to the investigation, people make judgements on the information available to them. For example, if we apply the findings of Ohbuchi and Sato [17] to situations where patients perceive the cause of adverse events to have been the behaviour of medical practitioners, it is likely that patients might consider whether the practitioners in question could have controlled their behaviour and whether they made an effort to do so in concluding whether the behaviour was deliberate or negligent.

People attribute blame to someone based on this conclusion [12]. Where the cause of the harm is unclear, patients may attribute all, or part, of the blame to themselves. Irrespective of who they blame, people will characteristically experience emotions of depression [18], anxiety [18], anger [19] and hostility [18]. In the case of self-blame, there may in addition be feelings of guilt and shame [20]. These emotions, but particularly shame, lead to anger which people typically turn on themselves [20]. Considering these findings, it is likely that patients could, after an adverse event, present as uncooperative, angry, blaming and condemnatory, or distraught and self-abusive.

At the behavioural level, people who experience a stress reaction either want to flee or fight. People who completely or partially blame themselves for an adverse incident may try to flee the situation by, in extreme cases, attempting suicide.

Where patients blame professionals, they may try to avoid them and others associated with them, thereby preventing themselves from obtaining optimal care and treatment. A stress reaction might also lead to withdrawal from other people, thereby missing positive social interaction and support that are of fundamental importance to people [21], especially when they are experiencing a crisis. The fight response often takes the form of revenge-taking behaviour [22]. In the context of a professional–patient relationship, revenge behaviour may, for instance, take the form of formal complaints or litigation. Even if patients did not go to these extremes, their relationships with their professionals would be the antithesis of the ideal professional relationship that should be characterized by trust, co-operation and shared decision-making [8].

When there is no, or inadequately open, disclosure of adverse events, patients are more likely to be at risk of experiencing these stress responses which may, in turn, negatively impact on their health and recovery.

Dealing with negative affect and hyperarousal

There are a large number of methods of dealing with the immediate negative affect and hyperarousal that follows an adverse event [23–25]. As these experiences are aversive, most people try to eliminate or reduce them by forgiving those they blame for the event. That is, they let go of grudge feelings and, in some cases, develop positive feelings. This may also involve reconciliation, the interpersonal process of re-establishing a relationship of trust with another. Where there is no need for the relationship to continue, forgiving should be enough, but in other cases, such as those where there is a need for continued association such as between patients and their health professionals, reconciliation is required. Worthington and Scherer [13], however, believe that some people use ruminations about an incident to maintain a state of negative affect and hyperarousal. Worthington and Scherer call this a state of unforgiveness—an unfortunate term given that forgiving is not the only way of resolving this state, but we will use it because there is not currently a term that accurately captures the resentment, bitterness and hostility that wronged people feel. After an adverse event, an unforgiving patient may persistently revisit the incident in a way that perpetuates negative thoughts and emotions. Such a patient is therefore likely to be constantly feeling angry with the situation and those they blame for it. In contrast, a patient who has forgiven those responsible for the incident is less likely to be angry and resentful and more likely to re-engage with medical treatment.

Although this may not necessarily be the case with patients, research findings with the primary and secondary victims of crime [26, 27] indicate that maintaining a state of unforgiveness may be functional for some people who feel aggrieved in that it protects them from further harm or assists them in engaging in constructive ways of dealing with their circumstances. In general, however, sustaining these

negative affects and hyperarousal may hamper recovery of people who feel aggrieved [18] and lead to them experiencing a range of health problems [28–31].

Possible pathways between forgiveness and recovery and health

Researchers have identified a number of pathways that may individually or collectively explain the association between forgiveness and unforgiveness on the one hand and recovery and health on the other hand [31–33]. These include neurobiological paths [13, 34] and social mechanisms [31–33]. For instance, in the health context, unforgiving patients may avoid professionals [35] and other people [36] who can assist and support them.

At present, however, the most fully developed support for the hypothesis that forgiveness can lead to better health outcomes following an adverse event is provided by research findings that forgiving leads to a reduction of negative affect and associated physiological reactivity [32]. Researchers believe that decreased immune system activity, allostasis, contraction of digestion and decreased release of hormones that has been associated with the stress of unforgiveness may impair the recovery of people and their health [13].

Research that has examined associations between unforgiving and forgiving, emotional affect and physiological arousal has produced varied findings. There has been some evidence that forgiving is associated with decreased subjective stress [37], depression [14, 38], anxiety [32, 39], hostility [19, 32, 40] and anger [32, 41]. Forgiveness has also been associated with increased positive affect and self-esteem [42]. These characteristics represent a marked contrast to the description of an unforgiving patient in the previous section of the paper.

There is empirical evidence for links between forgiveness and unforgiveness and immediate physiological responses. Findings have shown associations between forgiving and reduced cortisol reactivity [40] and lower haematocrit levels, and lower white cell counts and higher toxicity prevention activity levels [43]. Witvliet *et al.* [44] similarly found that forgiveness imagery decreased sympathetic nervous system reactivity measured by facial electromyography, skin conductance, heart rate and blood pressure (also see ref. 45). Further evidence comes from Lawler *et al.* [46] who found that forgiving of a recalled betrayal by college students was associated with lower cardiovascular reactivity. Lawler *et al.* [32] could not replicate all these findings, but this might have been the result of methodological disparities.

An association between forgiveness and health has been demonstrated in a number of studies [see ref. 47 for a review]. Many of these studies were not methodologically strong, but since the turn of the century, the studies have become more sophisticated. For instance, in research that used national probability data from the USA, Toussaint *et al.* [48] found a positive association between forgiveness of others and self-rated health for adults of 65 and older. In a study that used community adults, Seybold *et al.* [43] found that higher levels of forgiveness

correlated with better health habits (lower cigarette and alcohol use). In another laboratory study of 81 community adults, Lawler *et al.* [32] found an association between forgiveness and five measures of health (symptom checklists, number of medications taken, self-report of sleep quality, fatigue and somatic complaints). However, direct evidence that forgiveness is related to recovery, enduring health or disease is still virtually non-existent outside laboratory settings [28].

Promotion of forgiving after adverse incidents

Notwithstanding that the evidence is not strong, the majority view among authors who write about the association between forgiving and health appears to be that there is considerable support for the conclusion that it may be good for the health of people if they forgive wrongdoers. Despite the lack of research that specifically focuses on patients who have experienced an adverse event, analogous findings seem to present strong enough evidence to submit that it is worthwhile to promote forgiving by patients after adverse events.

Forgiving is, however, a complex process which is still poorly understood [49]. Factors that play a role include patients' perceptions of the seriousness of the harm [49], the level of responsibility they attribute to the professional [50], their personalities (including whether they have a forgiving disposition) and socio-cognitive factors [22, 51, 52].

Another factor that may play a role in forgiving is whether professionals respond to patients in an apologetic way after a harmful event [24, 53]. The process by which apologetic responses influence forgiving is not clear, and an apology is neither a prerequisite [54, 55] nor a guarantee [54] of forgiveness.

The Standard does not require or suggest that professionals should offer an apology in the course of disclosure, but recommends the expression of regret. The term 'apology' is cited in related literature, such as the *Health Care Professionals Handbook* [56], but neither apology nor an expression of regret is defined. A similar lack of clarity regarding apology can be found in the report prepared by the Legal Process Reform Group of the Australian Health Ministers' Advisory Council [3]. The use of the phrase 'an apology or expression of regret' in paragraphs 4.28 and 4.31 suggests that the authors believe that an apology differs from an expression of regret. This impression is confirmed when the authors say in paragraph 4.31 that an apology is not an admission of liability without saying the same about expressions of regret. The wording in the paragraph appears to suggest that an apology is an expression of regret plus something which is not an admission of liability [57].

Researchers have found that an expression of regret with no admission of fault is not as effective as more comprehensive apologies in facilitating forgiving and reconciliatory behaviour in harmed people [58]. It is therefore likely that patients may require more than a mere expression of regret after an adverse event, and this is borne out by Iedema *et al.* [6], finding that:

interviewees who expressed satisfaction about the disclosure process were typically those whose expectations of a full apology... and an offer of tangible support were met (p. 10).

A full apology is one that consists of an admission of responsibility for causing the harm, an expression of regret, and action to remedy the harm and to prevent future occurrences of similar incidents [58–60]. An apology of this nature may work at a number of levels in promoting forgiving [61].

The admission of responsibility component of an apology first provides patients with information that will help them understand the situation. This is likely to help them achieve at least some sense of closure [62, 63] and allow them to stop their search for information. Secondly, by acknowledging responsibility, professionals communicate that they recognize patients as autonomous people who have the right, and ability, to make decisions about their treatment. This in turn will help patients regain some sense of control [15], make them feel empowered and revive their self-esteem [64]. Finally, patients who receive a formal admission of responsibility are likely to feel that they are being dealt with fairly and respectfully [6] and therefore may be less inclined to engage in either revenge or withdrawal behaviour.

The expression of regret component of apologies may first assist patients to develop more positive perceptions of the characters of professionals [65, 66]. This will help dispel perceptions that the behaviour of professionals was controllable and avoidable, and therefore intentional [67]. Although patients may still attribute blame to professionals, its intensity should be reduced. An expression of regret may, secondly, facilitate patients' ability to develop empathy with professionals. Some researchers see empathy as the key to forgiving [22, 67, 68] because empathic patients are more likely to recognize that unintended outcomes occur, that other circumstances may have contributed to the incident [69], that it is human to err and that they themselves may also have caused people harm [70].

Research findings in other areas suggest that it is likely that in the context of adverse incidents, patients will be looking for actions from professionals that are aimed at correcting the harm, taking care of their immediate needs and taking steps to prevent a repeat of similar incidents in future [6]. Action by professionals who address the needs of patients provides some confirmation that the offered apologies are genuine [66].

If open disclosure incorporating an apology has the benefits postulated here, there is the potential for a healthier outcome for patients that contrasts with the negative effects of stress responses associated with adverse events where there has been inadequate or no disclosure. Disclosure as defined in the Standard [2] includes all the components discussed in this section, with the notable exception of admission of responsibility.

Conclusion

The aim of this paper was to explore a hypothesis that disclosure by professionals of adverse events might ameliorate the negative psychological and physiological consequences of

adverse events, which may in turn moderate the negative impact of an adverse event on the recovery and general health of patients. Not surprisingly, no research could be found that dealt specifically with the impact of an adverse event on the recovery and health of patients. There is, however, a body of psychological literature that indicates that patients' psychological–physiological responses to adverse incidents may impair their recovery and health, especially if the response is prolonged. There is also some evidence that suggests that forgiving by patients of the professionals they blame for the adverse event may moderate the effects of the incident on their recovery and health. There is no research that specifically examines whether disclosure of an incident will help patients to forgive professionals after an adverse event. Nevertheless, the evidence that has been synthesized from relevant areas of research indicates that an apology that incorporates an admission of responsibility, an expression of regret and some action by professionals to deal with the needs of patients may promote forgiving.

Therefore, while much more research is required, there is modest evidence on a series of intermediate steps that might plausibly connect a policy of disclosure with better health outcomes, especially if the disclosure incorporates an apology and an admission of responsibility. At the least, this appears to be a perspective that is worthy of further empirical investigation.

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References

1. Australian Commission for Safety and Quality in Health Care. *Supporting Open Disclosure*, Melbourne, Australia, online report, 2008. <http://www.safetyandquality.org/internet/safety/publishing.nsf/Content/PriorityProgram-02>.
2. Australian Council for Safety and Quality in Health Care. *Open Disclosure Standard: A National Standard for Open Communication in Public and Private Hospitals, Following an Adverse Event in Health Care*. Canberra: Commonwealth of Australia, 2003.
3. Australian Health Ministers Advisory Council [AHMAC]. *Responding to the Medical Indemnity Crisis: An Integrated Reform Package*. Melbourne, Australia: The Council, 2002.
4. Anderson K, Allan D, Finucane P. A 30-month study of patient complaints at a major Australian hospital. *J Qual Clin Pract* 2001;**21**:109.
5. Daniel A, Burn R, Horarik S. Patients' complaints about medical practice. *Med J Aust* 1999;**170**:598–602.
6. Iedema R, Sorensen R, Manias E *et al*. Patients' and family members' experiences of open disclosure following adverse events. *Int J Qual Health Care* 2008;**20**:421–32.

7. Schwappach D, Koeck C. What makes an error unacceptable? A factorial survey on the disclosure of medical errors. *Int J Qual Health Care* 2004;**16**:317–26.
8. Allan A. *An International Perspective of Law and Ethics in Psychology*. Somerset West, South Africa: Inter-ed, 2008.
9. Lazare A. The healing forces of apology in medical practice and beyond. *DePaul Law Rev* 2007–2008;**57**:251–65.
10. Corrs Chambers Westgarth. *Open Disclosure Project: Legal Review. Report Commissioned by the Australian Commission on Safety and Quality in Health Care*. Melbourne, Australia: The Legal Firm, 2002.
11. Barclay JS, Blackhall LJ, Tulsy JA. Communication strategies and cultural issues in the delivery of bad news. *J Pall Med* 2007;**10**; doi:10.1089/jpm.2007.992911.
12. Weiner B. *Judgement of Responsibility: A Foundation for a Theory of Social Conduct*. New York: Guilford Press, 1995.
13. Worthington EL, Scherer M. Forgiveness is an emotional-focussed coping strategy that can reduce health risks and promote health resilience: theory, review, and hypothesis. *Psychol Health* 2004;**19**:385–405.14.
14. Witvliet CVO. Forgiveness and health: review and reflections on a matter of faith, feelings, and physiology. *J Psychol Theol* 2001;**29**:212–24.
15. Strang H, Sherman LW. Repairing the harm: victims and restorative justice. *Utah Law Rev* 2003;**15**:15–42.
16. Wemmers JM. *Victims in the Criminal Justice System*. Amsterdam: Kugler Publications, 1997.
17. Ohbuchi K, Sato K. Children's reaction to mitigating accounts: apologies, excuses, and intentionality of harm. *J Soc Psychol* 1994;**134**:5–18.
18. Kiecolt-Glaser JK, McGuire L, Robles TF *et al*. Emotions, morbidity, and morality: new perspectives from psychoneuroimmunology. *Annu Rev Psychol* 2002;**53**:83–107.
19. Eaton J, Ward Struthers C. The reduction of psychological aggression across varied interpersonal contexts through repentance and forgiveness. *Aggress Behav* 2006;**32**:195–206.
20. Tangney JP, Wagner P, Fletcher C *et al*. Shamed into anger? The relation of shame and guilt to anger and self-reported aggression. *J Pers Soc Psychol* 1992;**62**:669–75.
21. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol* 2000;**55**:68–78.
22. McCullough ME, Rachal KC, Sandage SJ *et al*. Interpersonal forgiveness in close relationships II: theoretical elaboration and measurement. *J Pers Soc Psychol* 1998;**75**:1586–603.
23. Wade NG, Worthington EL. Overcoming interpersonal offenses: is forgiveness the only way to deal with unforgiveness? *J Couns Dev* 2003;**81**:343–53.
24. Witvliet CVO, Worthington EL, Wade NG. Victims' heart rate and facial EMG responses to receiving an apology and restitution. *Psychophysiol Suppl* 2002;**39**:S88.
25. Worthington EL. Unforgiveness, forgiveness, and reconciliation in societies. In: Helmick RG, Petersen RL (eds). *Forgiveness and Reconciliation: Religion, Public Policy, and Conflict Transformation*. Philadelphia: Templeton Foundation Press, 2001, 161–82.
26. Cooney A, Allan A, Allan MM. Forgiving by primary and secondary victims of violent and sexual crimes. *Paper Presented at the Third International Congress of Psychology and Law*, 3–8 July 2007, Adelaide, Australia.
27. Gall S, Allan A. Emotion and the law: experience of victims of sexual offences. *Paper Presented at the 37th Annual conference of the Australian Psychological Society*, 27 September to 1 October 2002, Gold Coast, Queensland.
28. Harris AHS, Thoresen CE. Forgiveness, unforgiveness, health, and disease. In: Worthington EL (ed). *Handbook of Forgiveness*. New York: Brunner-Routledge, 2005, 321–33.
29. Kaplan RM, Saccuzzo DP. *Psychological Testing: Principles, Applications, and Issues*, 5th edn. Belmont, CA: Wadsworth, 2001.
30. Pingleton JP. The role and function of forgiveness in the psychotherapeutic process. *J Psychol Theol* 1989;**17**:27–35.
31. Thoresen CE, Harris AHS, Luskin F. Forgiveness and health. In: McCullough ME, Pargament Thorsen CE (eds). *Forgiveness: Theory, Research, and Practice*. New York: Guilford Press, 2000, 254–80.
32. Lawler KA, Younger JW, Piferi RL *et al*. The unique effects of forgiveness on health: an exploration of pathways. *J Behav Med* 2005;**28**:157–67.
33. Salovey P, Rothman AJ, Detweiler JB *et al*. Emotional states and physical health. *Am Psychol* 2000;**55**:110–21.
34. Stein DJ, Kaminer D. Forgiveness and psychopathology: psychobiological and evolutionary underpinnings. *CNS Spectr* 2006;**11**:87–9.
35. Bono G, McCullough ME, Root LM. Forgiveness, feeling connected to others, and well-being: two longitudinal studies. *Pers Soc Psychol Bull* 2008;**34**:182–95.
36. Karremans JC, Van Lange PA, Holland RW. Forgiveness and its associations with prosocial thinking, feeling, and doing beyond the relationship with the offender. *Pers Soc Psychol Bull* 2005;**31**:1315–26.
37. Harris AHS, Luskin F, Norman SB *et al*. Effects of a group forgiveness intervention on forgiveness, perceived stress, and trait-anger. *J Clin Psychol* 2006;**62**:715–33.
38. McCullough ME. Forgiveness as a human strength: theory, measurement, and links to well-being. *J Soc Clin Psychol* 2000;**19**:43–33.
39. Kaminer D, Stein DJ, Mbanga I *et al*. The truth and reconciliation commission (TRC) in South Africa: relations to psychiatric status and forgiveness among survivors of human rights abuses. *Br J Psychiatry* 2001;**178**:373–7.
40. Berry JW, Worthington EL. Forgiveness, relationship quality, stress while imagining relationship events, and physical and mental health. *J Couns Psychol* 2001;**48**:447–55.
41. Al-Mabuk RH, Enright RD, Cardis PA. Forgiveness education with parentally love-deprived late adolescents. *J Moral Educ* 1995;**24**:427–44.
42. Lundahl BW, Taylor MJ, Stevenson R *et al*. Process-based forgiveness interventions: a meta-analytic review. *Res Soc Work Pract*

- [serial online] 2008 [cited 17 June 2009]; doi:10.1177/1049731507313979.
43. Seybold KS, Hill PC, Neumann JK *et al.* Physiological and psychological correlates of forgiveness. *J Psychol Christ* 2001;**20**:250–9.
 44. Witvliet CVO, Ludwig TE, Vander Laan KL. Granting forgiveness or harbouring grudges: implications for emotions, physiology, and health. *Psychol Sci* 2001;**12**:117–23.
 45. Witvliet CVO, Worthington EL, Root LM *et al.* Retributive justice, restorative justice, and forgiveness: an experimental psychophysiology analysis. *J Exp Soc Psychol* 2008;**44**:10–25.
 46. Lawler KA, Younger JW, Piferi RL *et al.* A change of heart: cardiovascular correlates of forgiveness in response to interpersonal conflict. *J Behav Med* 2003;**26**:373–93.
 47. Macaskill A. The treatment of forgiveness in counselling and therapy. *Couns Psychol Rev* 2005;**20**:26–32.
 48. Toussaint LL, Williams DR, Musick MA *et al.* Forgiveness and health: age differences in a U.S. probability sample. *J Adult Dev* 2001;**8**:249–57.
 49. Strelan P, Covic T. A review of forgiveness process models and a coping framework to guide future research. *J Soc Clin Psychol* 2006;**5**:1059–85.
 50. Bennett M, Earwaker D. Victim's responses to apologies: the effects of offender responsibility and offense severity. *J Soc Psychol* 1994;**134**:457–64.
 51. Kaminer D, Stein DJ, Mbanga I *et al.* Forgiveness: toward an integration of theoretical models. *Psychiatry* 2000;**63**:344–57.
 52. Zechmeister JS, Garcia S, Romero C *et al.* Don't apologise unless you mean it: a laboratory investigation of forgiveness and retaliation. *J Soc Clin Psychol* 2004;**23**:532–64.
 53. McCullough ME, Worthington EL, Rachal KC. Interpersonal forgiving in close relationships. *J Pers Soc Psychol* 1997;**73**:321–36.
 54. Allan A, Allan MM, Kaminer D *et al.* Exploration of the association between apology and forgiveness amongst victims of human rights violations. *Behav Sci Law* 2006;**24**:87–102.
 55. Enright RD, Freedman SR, Rique J. The psychology of interpersonal forgiveness. In: Enright RD, North J (eds). *Exploring Forgiveness*. Madison, WI: University of Wisconsin Press, 1998, 46–62.
 56. Australian Council for Safety and Quality in Health Care. *Open Disclosure: Health Care Professionals Handbook*. Canberra: Commonwealth of Australia, 2003.
 57. Allan A. *Implementing the Australian Open Disclosure Standard: The Legal Situation in Western Australia*. Perth, Western Australia: Unpublished manuscript, 2008. http://www.psychology.ecu.edu.au/staff/documents/allanA/87_Allan_OD_Legal_Review.pdf.
 58. Robbennolt JK. Apologies and legal settlement: an empirical examination. *Mich Law Rev* 2003;**102**:460–517.
 59. Allan A. Functional apologies in law. *Psychiatry Psychol Law* 2008;**15**:369–81.
 60. Robbennolt JK. Apologies and settlement levers. *J Empir Leg Stud* 2006;**3**:333–73.
 61. Slocum D, Allan A, Allan MM. The difference between apology and true sorrow from an offended individual's perspective. *Paper Presented at the 36th Annual Meeting of the Society of Australasian Social Psychologists*, 12–15 April 2007, Brisbane, Australia.
 62. Baumeister RF, Stillwell AM, Wotman SR. Victim and perpetrator accounts of interpersonal conflict: autobiographical narratives about anger. *J Pers Soc Psychol* 1990;**59**:994–1005.
 63. Zechmeister JS, Romero C. Victim and offender accounts of interpersonal conflict: autobiographical accounts of forgiveness and unforgiveness. *J Pers Soc Psychol* 2002;**82**:675–86.
 64. Lin W, Mack D, Enright RD *et al.* Effects of forgiveness therapy on anger, mood and vulnerability to substance use among inpatient substance-dependent clients. *J Consult Clin Psychol* 2004;**72**:1114–21.
 65. Exline JJ, Baumeister RF. Expressing forgiveness and repentance. In: McCullough ME, Pargament KI, Thorsen CE (eds). *Forgiveness: Theory, Research, and Practice*. New York: Guilford Press, 2000, 133–55.
 66. Schmitt M, Gollwitzer M, Förster N *et al.* Effects of objective and subjective account components on forgiving. *J Soc Psychol* 2004;**144**:465–86.
 67. Ohbuchi K, Kameda M, Agarie N. Apology as aggression control: its role in mediating appraisal of and response to harm. *J Pers Soc Psychol* 1989;**56**:219–27.
 68. Macaskill A, Maltby J, Day L. Forgiveness of self and others and emotional empathy. *J Soc Psychol* 2002;**142**:663–5.
 69. Enright RD, Rique J, Coyle CT. *The Enright Forgiveness Inventory (EFI) User's Manual*. Madison, WI: The International Forgiveness Institute, 2000.
 70. Exline JJ, Baumeister RF, Zell A L *et al.* Not so innocent: does seeing one's own capability for wrongdoing predict forgiveness? *J Pers Soc Psychol* 2008;**94**:495–515.