

Humility aspect in the Mastery-Humility model for the Teaching of Engineering Ethics

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ABSTRACT

Humility is worthy of being the compass for moral competence for engineers. Structural Equation Modelling (SEM) helps, to some extent, evaluate the humility sub-scale as part of the Mastery-Humility model. A case study approach using mixed-method sequential exploratory design was carried out to determine the effectiveness of teaching this value through formal teaching modules versus informal methods. Group Y, which underwent the latter, met the model's required levels of fit indices and confirmed by Independent t-test. There was a noteworthy margin of difference in the scores for Group Y (M = 10.01, SD = 5.21) and Group X (M = 8.74, SD = 4.75) conditions; $t(324) = 2.46$, $p = 0.015$. Group X does not achieve the acceptable fit indices. The results indicate it is more effective to teach humility through informal means.

Keywords: humility, mastery, formal, informal, fit, effective

1. INTRODUCTION

Engineering Ethics is the discipline and activity geared towards understanding the moral values guiding the engineering practice. To achieve ethical practice within a profession like engineering, an individual's actions must concur with the rules of professional conduct set by the constitution of engineers' respective society. The profession (practices, procedures, instructions) has made it sufficiently conducive to an individual's accepting moral responsibility and fulfilling moral obligations.

Professional procedures are in place to facilitate the practice of the code of ethics. Engineers made it certain that those in engineering can act morally by design rather than by accident. To attain that, the teaching of ethics is not merely repeating verbatim the procedures of professional conduct but also to instil ethics' virtues. Engineers should be competent and ethical, attaining humility in the latter as a personal trait.

It is a challenge, nevertheless because more often than not, engineers are employed in corporations to make profits; their individualistic traits are not distinguishable from the whole 'body of the organisation. The engineer is now less visible to the public. Technology is the "corporation" domain, resulting in the engineer's anonymity, focusing on serving the organisation rather than the public.

2. TEACHING OF ENGINEERING ETHICS

Martin and Schinzinger (1996) introduce four major ethical theories: 'rights, utilitarian, deontological, and virtue ethics. They define engineering ethics as "(a) the study of the moral issues and decisions confronting individuals and organisations involved in engineering", and (b) "the study of related questions about moral conduct, personality, plans, and correlation of people and companies dealing with technologies" (Martin and Schinzinger 1996, 23).

The aims of such teaching are to prepare students for their future as engineers, the likely ethical issues that they may face and to have moral competency. The behaviour concerning morals can be assessed on professional ethics concepts like competence, responsibility, and safety. Personal ethics should be overlapping with professional ethics.

2.1 Case-based Approach

There are two modes of teaching ethics commonly used: the case-based and the theoretical or moral based approaches. The former makes use of scenarios and actual events that have taken place. These cases show the positivists that there are no perfect systems, although the 'best' sciences are employed. There were significant scale incidents like the Citicorp Center in New York and the space shuttle Challenger (Martin and Schinzinger (1996)). The first case involved the acceptance of truth wherever it comes from. A student pinpointed the mistake made in the design and construction. However, the courage to admit and make the necessary changes has improved the building's strength that it can resist even 1 in the 200-year storm instead of failing at 1 in the 16-year storm. The second case involved the conflict between an engineer and the other engineer wearing the 'manager's hat'. The case illustrates the dilemma faced in many organisations between business and professional conduct.

Although those values are helpful to learn, this teaching mode's drawback highlights 'distance' (Elliot, 2001). Most students would perceive that in no way they will be involved in such significant cases. They cannot relate to them in their daily practice. The other perception is that they happened a long time ago, which is not relevant presently and outdated. Thirdly, the good and bad actions were involving the morals of individual engineers. In contrast, the majority of them would feel that once they are in corporations, there is little chance that individuals can display their true selves and be noticeable. Despite this, this paper focuses on strengthening these values by exploring the spiritual dimension in the individual's ethical understanding.

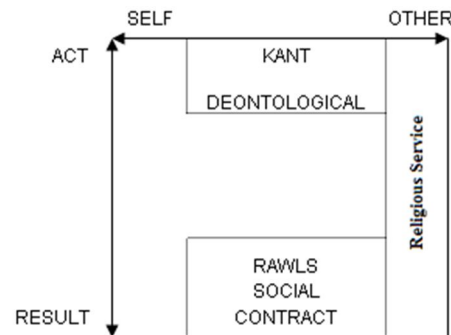
2.2 Moral based Approach

As mentioned above, engineers are typically employed by corporations and only in later parts of their career they become self-employed. The inability to relate ethical issues that may impact their daily and regular dealings in their work generally results in diminishing interest in ethical matters.

2.2.1. Ethical Theories: Benefit-Cost

Ethical theories consider what can or cannot be done in a situation when all are taken into account. The two moral subjects of our actions are ourselves versus others. More often than not, the decision is whether the proper weightage has been given for the good of everyone, ourselves or others. In the same way, what weightage for the action and the consequence of that action. Do we decide to act based on the 'right' moral action disregarding the results, or the consequence dictates our action?

There are various ethical theories concerning the weightage given to self versus others' consideration and act versus results (Vesilind,1991). Using benefit-cost analysis to maximise happiness, Bentham (1948) stated that results are more important than the action itself. His utilitarian theory considered oneself as one of the many actors in decision making. 'Rational selfishness', a theory held by Rand (1905–1982), proposes that the results of action benefit the doer wholly. In contrast, altruism is nothing to the doers, but others get the most benefits.



**Fig.1 Some Ethical Theories based on contract
(After Vesilind (1991))**

2.2.2. Ethical Theories: Contract Based

Another theory proposed by Vesilind (1991) is to achieve fulfilment by using the social contract. Rawl (1921-2002) suggested a theory based on the agreement by all on the fundamental rights equal, the behaviour on 'universal liberty'. This brought justice and happiness (Rawl, 1978). The other theory the Kant's deontological view on ethics is that an action's results or consequences are secondary to the actions. If it is a duty or obligation, it must be carried out regardless (Figure 1). The religious contract that is the third theory under this category is most fulfilling in term of the sustained moral obligation provided purposeful actions are taken based on aligning thoughts and meaning. This is the focus of this paper.

2.2.3 Moral engineer

It is the perception among engineers that morality should not be included in consideration of ethics. Pons (2104) agreed that this might be the case with liberal art education, but the engineering students tend to do well in matters concerning conscientiousness. Conscientiousness is one of the personality attributes for characterising personality.

It has been found that conscientiousness, not intellect, make them better academically in their learning in engineering (Horne et al., 2012). Furthermore, non-engineering (Poropat, 2009; O'Connor & Paunonen, 2007). Dayang (2013), in her study on the academic performance of electrical engineering students in the university understudy for this paper, showed a significant relationship between good grades with better spiritual well-being. Pons believes that conscientiousness which means morality should be included in the teaching of ethics. It simplifies the process of making correct decisions with integrity.

However, in a specific setting, the abstract theory like morality has its limitation in guiding the students (Perlman & Varma, 2001). There is a need to interpret and apply moral and ethical theories within the context of real-world problems. They suggested a continual linkage between the faculty members at the post-graduation stage when the graduates are practising. The linkages can help

tackle the day-to-day circumstances that require ethical decision making for resolving ethical dilemmas.

Without the 'moral competence' at the work-place, when "forced to choose between doing what is right versus doing what is convenient, convenience often wins" (Veach, 2006). He said by using the approach of relativism; it is easy to rationalise the many unethical choices. Rachel (2020) stated that in keeping with the doctrine of ethical relativism, what is morally wrong or right differs from an individual to another or from society to society, and there are no absolute truths in ethics. It necessitates using a code of conduct governed by religious belief or contract, as mentioned above.

This may seem abstract to some because, unlike the concept of positivism, a view held by many engineers. It rejects metaphysics and theism. Scientific facts with no direct bearing on morality and religion are frequently used in engineering. However, if closely observed, the facts depended on specific theory and concept and realised only when built coherently. Thus, a fact is like a brick of a building. Upon putting all the brick together then a building is formed. Thus, the brick or fact is encapsulated within a framework or pattern related to the truth. This truth bears a relation to the religious truth, which is concerned with the general conception of reality as God's manifestation. A framework can be formed by understanding nature's forces that will not lead to a disparity between science and religion.

3. ETHICS AND 'AKHLAQ'.

The word "ethics" comes from the Greek word "ethos", meaning "habit" or "custom". A corresponding term, *khuluq* (character), preceded the term ethos in the Islamic world. It can be defined as rules for behaviour following a system of values. Ethics is the discipline aims at observing human behaviour. The similarity between *khuluq* (it is plural: *akhlaq*) with ethics examines man's good and bad behaviour. The difference is with the branches of philosophy; ethics starts and ends with the human faculty of thinking, whereas *akhlaq* is based on the teaching of God and His Messenger

For a Muslim, ethics is derived from the Qur'an and the deeds of the Prophet. The moral life of the Muslim is primarily religious. Thus, the ethical inquiry must begin with studying every aspect of Islamic religious teachings since ethics occupies the central place as Islam's core. The aim of acquiring knowledge in Islam is to attain the truth (i.e. God), whereas the purpose of *akhlaq* (ethics) is to behave following this truth (i.e., God's law). Therefore, *akhlaq* has been the main interest of Muslims since it deals with the fundamental nature of all actions in Islam. By extension, the nature of Islamic law (*shari'ah*) (Omar, 2010). In other words, *akhlaq* for a Muslim are the practical implications of his faith in God. All his actions and activities are judged as acts of obedience or disobedience to God. In this paper, humility, a part of '*akhlaq*', is taken as a representative element or characteristic of one with high moral standing.

3.1 Humility: Definition and Concept

Humility to Muslims and non-Muslim alike is defined as compassion for others, willingness to share credits for accomplishment and usually accompanied by higher levels of empathy, gentleness, respect, and value. Although there is no standard definition, humility is an interactive component between an individual to another individual and society (Emmons, 1999; Sandage & Wiens, 2001; Worthington, 1998). It is accepted as a virtue and in many ways to resolve conflicts between individuals. There are more forgiveness and reconciliation on the part of the affected parties.

Briefly, humility is not like some who thought it as a negative value in an individual. Someone who is an outcast in society. A person who is belittling his or her capacity to do any valuable work

demeaning oneself. Both understandings deny the fact that humility can be a positive quality. It may be why those in the psychology field of study keep a distance from this subject.

Humility is a positive outlook of oneself (Tangney, 2000), having integrity and dignity. It was defined as (Tangney, 2000): the ability to respect the truth from wherever it comes from, knowing his/her proper place and position in the society, and to highly regard the contribution of others to the society, de-emphasising one's equally significant role.

As Emmons (1999) mentioned, being modest is really about one's authentic and genuine self-evaluation. Templeton (1997) believes that humility differed from arrogance and that it involves the sharing of ideas from others towards creating a caring society. As Elliot (2010) put it, one with humility is at par with others and more receptive to recognising others' worthiness. He said, "They do not think less of themselves but rather think of themselves less".

3.2 Spiritual dimension

Many religions consider humility as the desired and highly regarded quality of man. (Chittister, 1991). Self-seeking and self-regard are discouraged in many beliefs, whereas humility is a characteristic most desirable. In the vertically upright relationship between man and God and one's horizontal relationship with others, humility does provide a setting for self-awareness and self-discipline. Thus one can build a better life for himself/herself on this earth. The spiritual dimension in the framework heightens one's aspiration to better oneself in pursuing a wholesome existence. It guides one with the proper direction to overcome difficulties in this life by being steadfast, fully aware of the Creator and the created.

4. ASSESSMENT OF HUMILITY

Researchers have not studied humility work due to their perceived relationship with religion. There was a reluctance to dwell on the subject matter since it relates to the values of religion. Psychologists deemed that the study on humility may lead to uncharted paths where it can be beyond any scientific measurement, or it can result in fruitless efforts. Religious arguments do not necessarily bound humility. Only it is a quality worth looking into, especially when it involves morality. It is helpful as an attribute for human endeavour and establishing the relationship between a man. It is an inner-directed force to be reckoned with. It is worthwhile also to study its position in the context of understanding religions.

The study of humility is also hampered by the absence of instrumentation tools (Tangney, 2002). It is usually associated with non-positive emotions like loss of face, wrongdoing and dishonour. These negative connotations added up to the difficulty of ascertaining the true meaning of humility.

Nevertheless, humility is genuine in giving an accurate picture of one's self-worth, what he is capable of and what he is not (Roberts, 1983). Since a humble person accepts his true nature, there is no necessity to compete with others to prove otherwise. Such an attitude allows one to have an open mind, willing to accept criticism on their inadequacy and to accepting inputs to improve oneself (Tangney, 2002). This is another link with religions because there is an atmosphere of peaceful co-existence since mutual and compromising attitude prevail. The humility trait of each member of the society will help sustain cordial interrelationship between individuals and society.

4.1 Measurement of Humility

As mentioned above, despite the possibility of improving better relationship with members of the society possessing this value, the efforts to determine its true meaning is complicated (Tangney,

2000; Exline et al., 2004b; Exline & Geyer, 2004). It seems that there is no significant finding that focusses on humility characteristic presently. Creating own inventories describing its relation with humility is inaccurate (Exline, 2008; Tangney, 2000.). It is difficult, too, since there is also no consensus on the real meaning of humility.

4.2 Mastery-Humility model

Humility is about having confidence and not a sign of weakness, shabby characters or weak. It reflects the capability of handling emotion, mental and physical constraints. In engineers' education, instilling a confidence level for the graduates will possibly bring about 'arrogant' as the outcome. To counter this possibility, it is the humility traits than can achieve balance and level-headedness.

It is invaluable when those who have achieved something and yet showing humility. They have something to be proud of but restraining from doing it due to humility. Despite the many more accomplishments that follow, they consistently display humility (Elliot, 2001). Whereas, for someone who does not achieve anything, his /her humility is a misplaced one. It is not acceptable that one who has failed yet showing humility because he has nothing to be proud of; commendable behaviour is for those who have accomplished a great deal but remain humble (Elliot, 2001).

The perception of humility as one who has experienced frequent failure and has low self-worth is incorrect (Roberts, 1983). They are the high achievers with praise-worthy accomplishments and who have mastered their field/area. Humility enables one to exude confidence to assume this disposition without having to brag about his achievements. As defined earlier, a person with humility has an accurate picture of himself, with full realisation of his/her strengths and weaknesses.

5. METHOD OF STUDY

Humility is described herein as one of the two components in a mastery-humility model developed for the engineering curriculum. It is a part of the main study which aimed to determine: (a) the moderating effect of humility sub-scale on the mastery-humility model and (b) the comparative study between formal with informal teaching of humility.

The primary study involved a case study of two universities (X and Y) with a predominantly Malay-Muslim population. The study approach for the development of the mastery-humility model is the mixed-method exploratory sequential design. The method of enquiry for the emergent proposition made use of the Straussian grounded theory approach.

A pilot study with 30 undergraduate students was carried out to try out the questionnaires on the mastery-humility model developed based on the pilot semi-structured interviews. Cronbach's coefficient was 0.71 for the whole scale. The questions then were modified with the addition of 2 more survey items to make it 24 after the completion of the semi-structured interviews of 32 academics and upon achieving the theoretical saturation. Five hundred seven students responded to the main questionnaire study. Since humility is the latent variable, Structural Equation Modelling (SEM) was used to measure it as a sub-scale of the model. An equal sample size of 163 respondents was taken from each university.

6. RESULTS AND DISCUSSION

For calibration of the SEM, a pooled Confirmatory Factor analysis was obtained. The Cronbach's Coefficient for the six constructs ranged from 0.72 to 0.94. The composite reliability level (C.R.) ranged from 0.73 to 0.95. For validity analyses, the convergent validity's average variance extracted (AVE) for every construct was 0.5 to 0.8, and the discriminant validity's Heterotrait-Monotrait ratio (HTMT) was 0.85.. The Confirmatory Factor Analysis (CFA) meets the goodness of fit, and the construct validity has the following fit indices (Table 1). The causal/effect modelling gave the loadings for the mastery-humility model as shown in Figure 1

Table 1. Fit Indices

Test	X ² /df	RMSEA	CFI	IFI	TLI	PDF	Helter's Critical N
Value	<4	≤.08	≥.95	≥.90	≥.90	≤1	≥75
Pooled Model	3.924	.076	.952	.952	.944	.804	159(01)

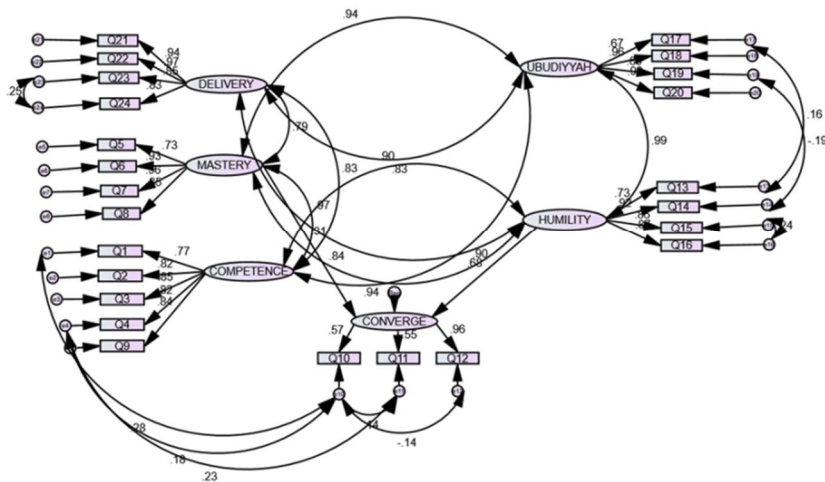


Figure 1. Mastery-Humility Model

Table 2. Fit Indices (MH Model)

Test	X ² /d f	RMSEA	CFI	IFI	TLI	PDF
Value	<4	≤.08	≥.95	≥.90	≥.90	≥.05
MH Model	3.31	.068	.963	.963	.956	.793

Table 3. Effect of Teaching Modules on Humility subscale (H.H.)

Test	Loading	Loading	Direct Effect	Direct Effect	Remark
Value	Mastery → Convergence	Humility → Convergence	Mastery → Convergence	Humility → Convergence	Respondents
H1	.282	.734	.382	1.423	X (N= 163)
H2	.244	.857	.310	1.211	Y (N= 163)

Test	Chi-square	X ² /df	RMSEA	CFI	TLI	Remark
Value		<4	≤.08	≥.95	≥.90	Respondents
H1	514.38	2.227.	.087	.935	.916	X (N= 163)
H2	446.82	1.934	.076	.955	.942	Y (N= 163)

By observing Table 3, the loading to CONVERGE by HUMILITY is higher when moderated by Group Y (.859>.734(H2)). The fit indices for Group Y show a better range of values (RMSEA =.076 < .08, CFI = .955 >.95 and lower Chi-square = 446.82. $p = 0.000$). Group X (H1) does not achieve the acceptable fit indices (RMSEA = .087, CFI = .935, higher Chi-square = 514.38 and higher X²/df = 2.227).

Further confirmation was carried out to compare between the two groups. From the independent samples t-test, there was a significant difference in the scores for Group Y (M = 10.01, SD = 5.21) and Group X (M = 8.74. SD = 4.75) conditions; $t(324) = 2.46$, $p = 0.015$.

7. ANALYSIS AND DISCUSSION

The SEM results on the impacts of formal teaching modules on humility have shown a significant difference between the formal and informal way of nurturing students' humility characteristics. Taking equal samples of students (163) from the two universities, students from University Y are better prepared for humility (CFI = .955, RMSEA = 0.076, X²/df = 1.934). In contrast, students from university X did not achieve the required levels of fit indices. The sample size is adequate for SEM since, according to Kline (2010) SEM, the sample size should be in the range of 100-200. The Hoetler's critical N = 134>75. Furthermore, from the independent sample t-test, students from university Y obtained a higher mean (10.01) than students from university X, which is 8.74. However, since the sample size is small for university Y and X, 5.25 % (163/3101) and 31.8 % (163/513) (excluding 114 from Manufacturing Department), respectively the results have to be treated with caution even though Group X constituted a sizable 1/3 of the population.

Several reasons may lead to this situation.

The first reason is University X because the standard teaching modules affect students' learning process with all learning by heart passing with good grades instead of learning by understanding. It seemed that there is a negative connotation when making it compulsory to pass the ethical course and contribute to the Cumulative Grade Point Average (CGPA). There was an instance that one was caught cheating in an ethics examination paper, which is definitely an unethical behaviour.

Secondly, there is also a difficulty when the subject lecturer, by way of trying to integrate the subject matter with Islamic values through the reading of verses of Qur'an, has met with resistance from students since the students feel they are deprived of the course content. It has been taken away by something they already know, or they are also following other courses like ethical courses. They

feel that the course's syllabus will not be finished at the end of the semester, or they may be incompetent for the industry. Thirdly, the coordinator did not pursue the integration of Islamic values in the curriculum and its delivery rigorously and merely repeated what had been taught in the earlier semesters.

These three reasons may lead to the teaching modules' ineffectiveness: the examinable forms of instruction, resistance by students, and the Islamisation coordinator's seemingly erroneous role.

In the case of University Y, they do not offer Islamic modules for standard delivery of Islamic values; instead, they used informal means. Their motto means approximately, Effort, Taqwa and Virtue. They have one subject, Islamic and Asian Civilisation, compared to six modules offered by University X. As discussed above, the results show some noticeable difference between the two, with University Y displaying a more positive humility characteristic based on the model. However, the sample size (163) is 5.25% of the Engineering students' population against 31.8% of University X.

The following may be the reasons:

Firstly, they have a program of inculcating the Islamic values informally through the practice of ethical values like reading verses of Qur'an before classes, lecturers relating a Hadith, and at the end of the classes, the students shake hands and thanking their lecturers. It is built upon them the humility to be grateful to the lecturer and know that 'bigger [sic]' God up there arranging their path to becoming engineer through the lecturer and through the system, and whatever resources are available.

They defined engineers as one with is favoured by the industry at the same time he/she is has a fear of God and high morality. That is the goal of their system, including the Students Affairs Department's activity in the faculty, so everything they do is subject with this aim into shaping that sort of character.

Secondly, the faculty organised all of their activities, 300 per year, based on this principle, and they have several lecturers who are formally accredited to develop soft skills. These are the activities, co-curricular activity that inculcates social development, moral development, communication skill. The faculty members also have the habit of welcoming students that mean upon starting the class, each time the lecturers are reminded to welcome students, that means even though they might come late but allow them into the class but ask them why. It is just like welcoming guests. At the Semester's end, the students and lecturers usually have food together anywhere they want in the class, in the café or under the tree, or can have a picnic to celebrate that. Financial aid was given to the program, including bringing cooked food to the classrooms. Thus, human values are brought into the classrooms.

Thirdly, the faculty ran a Holistic Soft-Skill Management (HSM) course, which helps measure and enhance students' values and character. They have tools like HSM to monitor the participants' activities and the Spiritual Well-Being (SWB) measurement used by the Counsellor to measure the Spiritual Well-Being of students. Besides, they have another tool which is the Coping Resources Inventory (CIR) which is also used by the Counsellor to measure the inner strength of the students to face the problems.

One of the Counsellors made use of the Spiritual Well-being Scale to improve the students' academic grades. It has been shown that good spiritual values would equate to having better grades (Dayang, 2013). The program run by a Faculty member with the Counsellor involved selecting mediocre students to subject them to rigorous spiritual training resulted in their grades being improved substantially.

8. CONCLUSION

It was a misplaced perception that there is a misconception on the disposition like humility as a component of ethics or '*akhlak*'. Morals best guide engineering ethics since engineers will give in to large organisations or employers' enormous pressure without a moral compass. Despite the anonymity of being an employee, he/she must remain a professional with competence and a high ethical standard. Humility is a measure of such ethical value, which opens up a more cordial relationship between individuals in the work-place and society. The use of Structural Equation Modeling enables the assessment of this latent variable. Humility is highly regarded in most world religions, but formal training is not enough in teaching this value. It has to be put into effect by the instructors' exemplary roles, the involvement of all in the teaching team, and the nurturing of students' spiritual-well beings.

REFERENCES

- Bentham, J. (1948). *Principles of Morals and Legislation*, MacMillan Co., New York., N.Y.
- Chittister, J. D. (1991). *Wisdom Distilled from the Daily. Living the Rule of St. Benedict Today*. San Francisco: Harper Collins
- Dayang Suzana Awang, (2013). *Effect of spiritual well-being on academic performance: A case study among students of the Faculty of Electrical Engineering, UiTM. (unpublished Master's thesis)*. Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia.
- Elliott, J.C. (2010). *Humility: Development and analysis of a scale*. PhD diss., University of Tennessee. https://trace.tennessee.edu/utk_graddiss/795
- Emmons, R. A. (1999). *The psychology of ultimate concerns*. New York: Guilford.
- Exline, J. J., Campbell, W. K., Baumeister, R. F., Joiner, T., & Krueger, J. (2004b). *Humility and modesty*. In C. Peterson & M. Seligman (Eds.), *The Values In Action (VIA) classification of strengths*. Cincinnati, OH: Values in Action Institute.
- Exline, J. J. & Geyer, A. L. (2004). *Perceptions of humility: A preliminary Study*. *Self and Identity*, 3: 95-114.
- Exline, J. J., Worthington, E. L., Jr., Hill, P., & McCullough, M. E. (2003). *Forgiveness and justice: A research agenda for social and personality psychology*. *Personality and Social Psychology Review*, 7, 337-348.
- Horne, R., Pons, D. J., & Helton, W. S. (2012). *Industry-based team-projects: Personality traits that influence success in Engineering Education*. *Journal of Adult Learning in Aotearoa New Zealand*, 40(1), 50-71.
- Martin. W. & R. Schinzinger. (1996). *Ethics in Engineering*, McGraw-Hill, Technology & Engineering
- O'Connor, M., & Paunonen, S. (2007). *Big Five Personality Predictors of Post-Secondary Academic Performance*. *Personality and Individual Differences*, 43, 971-990.
- Omar, M.N. (2010). *Ethics in Islam: A Critical Survey*, *Islammiyyat* 32, 157-171
- Perlman, B. & Varma, R. (2001). *Teaching Engineering Ethics*, *Proceedings of the 2001 American Society for Engineering Education Annual Conference & Exposition*, American Society for Engineering Education
- Pons, D. (2014). *Proximating Ethics: Perceptions of the engineering profession and implications for learning*, Institution of Professional Engineers New Zealand (IPENZ).
- Poropat, A. E. (2009). *A meta-analysis of the five-factor model of personality and academic performance*. *Psychological Bulletin*, 135(2), 322–338
- Rachels, J. (2020). *Ethical relativism philosophy*, Retrieved Aug. 17, <https://www.britannica.com/topic/ethical-relativism>
- Rawls, J. (1971). *A Theory of Justice*, Harvard Univ. Press, Cambridge, Mass.
- Roberts, R. C. (1983). *Spirituality and Human Emotion*. Grand Rapids, MI: Wm. B. Eerdmans Publishing

- Sandage, S. J., & Wiens, T. W. (2001). Contextualising models of humility and forgiveness: A reply to Gassin. *Journal of Psychology and Theology*, 29, 201-211.
- Tangney, J. P. (2000). Humility: Theoretical perspectives, empirical findings and directions for future research, *Journal of Social and Clinical Psychology*, 19, 70-82.
- Tangney, J. P. (2002). Humility. In C. R. Snyder & S. J. Lopez (Eds.). *Handbook of Positive psychology* (pp. 411-419). Oxford: Oxford University Press.
- Templeton, J. M. (1997). *Worldwide laws of life: Two hundred eternal spiritual principles*. Radnor, PA: Templeton Press.
- Veach, C.M. (2006). There's no such thing as engineering ethics. *Journal of Leadership and Management in Engineering*, Vol.6, Issue 3 Retrieved Aug. 17, [https://ascelibrary.org/doi/full/10.1061/\(ASCE\)](https://ascelibrary.org/doi/full/10.1061/(ASCE))
- Vesilind, P.A. (1991). Views on Teaching Ethics and Morals, *Journal of Professional Issues in Engineering Education and Practice*, Volume 117, Issue 2.
- Worthington, E. L., Jr. (1998). An empathy-humility-commitment model of forgiveness applied within family dyads. *Journal of Family Therapy*, 20, 59-76.