Gender differences in entrepreneurial types graduating into veterinary and other disciplines: implications and comparisons.

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Why is this important?

VISION – where is the vet profession heading?

• Innovation
• Leadership
• Productivity
• Enterprising individuals and organisations

Have you noticed?

• Student debt at graduation
• Salary issues for veterinarians especially females
• Who are our enterprising individuals?
Entrepreneurial leaders and organisations

Repeatedly initiate new service or product ideas

Redirect their people and assets to new uses and new ideas

Generate new ideas, assemble of resources, produce new services or products and deliver these to users by organization-wide redirection and cooperation

“must sustain such effort again and again”
Entrepreneurship is multi-dimensional

Innovation

New thing (services or products) or new way of doing things (processes)
Adapt and adopt processes to improve own business model

Opportunity-seeking

Management

Delivery of service or product
People
Financial

Enterprising individuals

Uncertainty-bearing

c.f. risk taking - entrepreneurs weigh up gain against risk seeking of high gain for moderate risk
Enterprising individuals can be different types

Entrepreneurial intent (EI)

- Growth EI
- Flexibility EI
- Social EI

Why does it matter to the health sciences e.g. vet profession?

Ajzen’s Theory of Planned Behaviour (1991)
Kim and Hunter (1993)
Entrepreneurship is important to the veterinary profession
Bok et al., 2011, Bok et al., 2014, Vet Futures Project Board, 2015

Our understanding of entrepreneurial dispositions and intent of veterinarians is limited

As environments become more dynamic and increasingly competitive, organisations (*and people*) must become more entrepreneurial.
Shepherd et al 2010

80% vets are females

Entrepreneurial orientation tied empirically to firm performance.
Covin & Slevin, 1989; Rauch et al., 2009; Runyan, Droge, & Swinney, 2008; Wiklund & Shepherd, 2005

Entrepreneurial abilities and attitudes desirable in employment situations
Douglas & Shepherd 2000
Intentions predict behaviour - Informing theory

- Attitude toward the behaviour
- Subjective norms/approvals
- Perceived behavioural control (self-efficacy)

Intentions (50% attitude) (30-60% PBC)

Behaviour (30% intent)

Ajzen’s Theory of Planned Behaviour (1991)
Kim and Hunter (1993)
Methods

Study population – Australian final year students of
• Veterinary programs x 3
• Entrepreneurship
• Nursing
• Engineering
• Science students (in process)

Survey
• single items for entrepreneurial and corporate work intent, response range 1-10
• validated scales with 4-5 items and response ranges 1 – 7, from which factor scores were created for growth, flexibility and social entrepreneurship

(Douglas 2013; Douglas, Venugopal et al. unpublished)

Quantitative analysis
Respondents – discipline, sex

Entrepreneurship N = 98
- % Males: 58.2
- % Females: 40.8

Engineering N = 49
- % Males: 83.7
- % Females: 16.3

Nursing N = 85
- % Males: 8.2
- % Females: 90.6

Veterinary N = 260
- % Males: 23.5
- % Females: 73.5
Respondents – age, university

Mean age
All 24.5 years
Males 24.1 years
Females 25.2 years

- University A n = 328 (96 vet students)
- University B n = 112 (only vet students)
- University C n = 52 (only vet students)
## 1.1 Types of entrepreneurial intent - scale item examples

### Growth EI

| Exploits a new technology or adopts a new process or service that promises to generate high profits over many years | .614 |

### Flexibility EI

| Allows you to have great flexibility to decide your work hours, your product lines etc. | .735 |

### Social EI

| Includes volunteer service to help people who have social and/or economic problems | .812 |
1.2 Types of entrepreneurial intent - all respondents

Growth

Flexibility

Social

Eng  Ent  Nur  Vet
M  F  M  F  M  F  M  F

Eng  Ent  Nur  Vet
M  F  M  F  M  F  M  F

Eng  Ent  Nur  Vet
M  F  M  F  M  F  M  F
1.3 Proportions of EI types x discipline x sex
(Proportion with factor scores ≥ 4.5 where 1 = highly unlikely to 7 = highly likely)

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Growth</th>
<th>Flexibility</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veterinary science</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females n = 191</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males n = 61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nursing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females n = 75</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males n = 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females n = 40</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males n = 56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Females n = 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males n = 41</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 2. Start or buy own business intent (general EI)

(where 1 = no intention and 10 is complete intention)

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Entrepreneurial intent (EI) mean score (sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>49</td>
<td>3.8 (2.6)</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>98</td>
<td>6.4 (2.4) &lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Nursing</td>
<td>85</td>
<td>2.8 (2.6) &lt;sup&gt;t&lt;/sup&gt;</td>
</tr>
<tr>
<td>Veterinary</td>
<td>260</td>
<td>5.2 (3.0) &lt;sup&gt;etn&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

Superscripts <sup>e, t, n and v</sup> indicate statistical difference to engineering, entrepreneurship, nursing and veterinary (all) respondents using ANOVA and Tukey HSD post hoc test (p<0.05)
3.1 Mean factor scores for females wanting to start/buy a business

- **Growth EI**
  - Engineering n=2/8
  - Entrepreneurship n=20/40
  - Nursing n=5/75
  - Veterinary n=58/191

- **Flexibility EI**

- **Social EI**

* P<.05 using ANOVA and Tukey HSD post hocs

High El female vet students have lowest Growth El.
3.2 Mean factor scores for males wanting to start/buy a business

* P<.05 using ANOVA and Tukey HSD post hocs
Though more female veterinary students intend to start/buy a business....

Few female veterinary students are growth entrepreneurs (6% overall)
60 (32%) of the 191 female vet respondents indicated intention to start/buy business
11 (18%) of these indicated growth entrepreneurial intent
(* Feakes, Hyams et al. 2016)

More male veterinary students are growth entrepreneurs (28% overall)
36 (59%) of the 61 male vet respondents indicated intention to start/buy business
17 (46%) of these indicated growth entrepreneurial intent (nearly half)
Higher male veterinarian salary expectations* and salary levels maybe related to this

(* Feakes, Hyams et al. 2016)
Veterinary students less socially entrepreneurial

No gender difference
Actually lower social entrepreneurial intent than other disciplines

Female veterinarian lower salary expectations and real salary deflation probably not related to this
Its all OK, there is always the corporate field...

Veterinary students indicated the lowest level of wishing to work in the corporate field/large company
<table>
<thead>
<tr>
<th>Field</th>
<th>N</th>
<th>Corporate (CWI) mean (sd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering</td>
<td>49</td>
<td>6.7 (2.2)$^v$</td>
</tr>
<tr>
<td>Entrepreneurship</td>
<td>98</td>
<td>7.2 (2.2)$^{nv}$</td>
</tr>
<tr>
<td>Nursing</td>
<td>85</td>
<td>6.0 (2.8)$^{env}$</td>
</tr>
<tr>
<td>Veterinary</td>
<td>260</td>
<td>4.6 (2.2)$^{etn}$</td>
</tr>
</tbody>
</table>

Superscripts $^e$, $^n$, $^t$ and $^v$ indicate statistical difference to engineering, entrepreneurship, nursing and veterinary (all) respondents using ANOVA and Tukey HSD post hoc test ($p<0.05$).
A question of fit

FIRM TYPE
- Public
- Independent
- Corporate
- Social

PERSON TYPE
- Growth entrepreneurial orientation
- Flexibility entrepreneurial orientation
- Social entrepreneurial orientation
- Management orientation
- Worker bees
Implications for the profession

There are discipline and gender differences

Admissions or educator intervention to boost entrepreneurship especially for female vets
So what can we do? not only are our female vets lower in EI, but also in all entrepreneurial orientations

Implications for educational policy makers
Implications for the profession

Where are our future innovators, leaders and visionaries going to come from?

Shall we just leave them to be worker bees?
Future research directions

What strategies can be put into place to improve entrepreneurial intent of the female student cohort?
Are there differences in entrepreneurial self-efficacies per gender, level and type of entrepreneurial intent?
Does the importance of income affect level and type of entrepreneurial intent?
Do altruism values have an affect on EI?
Do veterinary students have higher levels of altruism than other students?

Limitations

Sample size & response rate for engineering
Gender bias engineering and nursing
References


VetFuturesProjectBoard. Taking charge of our future: A vision for the veterinary profession for 2030. 2015.


MCANDREW, J. 19/09/2014 2014. RE: AVA membership demographic data. Type to FEAKES, A.


Shepherd et al 2010 ET&P Entrepreneurial spirals - entrepreneurial mindset and organisational culture

Acknowledgments

Participating students

Jennifer Hyams, Sarah Pollard-Williams, Edward Palmer and Noel Lindsay
3. Types of entrepreneurial intent - high EI respondents

(those indicating 7, 8, 9 or 10 on scale of 1 – 10 for intent to start/buy a business)
• Although the high EI veterinary females do outnumber the high EI veterinary males, only 18% of them compared to 46% of the males stated high growth entrepreneurial intent (GEI).
## Corporate or EI intentions vs reality

<table>
<thead>
<tr>
<th></th>
<th>Total Sites</th>
<th>%</th>
<th>Vets in Australia</th>
<th>Total businesses</th>
<th>Final year students per year</th>
<th>Supply per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3500</td>
<td>100</td>
<td>10,000</td>
<td>3000</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Corporate</td>
<td>175</td>
<td>5%</td>
<td>500-1000</td>
<td>? 5</td>
<td>26 - 46% CWI</td>
<td>156-210</td>
</tr>
<tr>
<td>Trad practices</td>
<td>3000</td>
<td>94%</td>
<td>9400</td>
<td>3000</td>
<td>33 – 51% EI (198 – 306)</td>
<td>60 – 92 buyers p.a.*</td>
</tr>
<tr>
<td>Not-for-profit</td>
<td>20-30</td>
<td>1%</td>
<td>100</td>
<td>? 21</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

*198 – 306 final years state high EI, and behaviour ~ 30% of intent so therefore 60 – 92 buyers per annum
Estimated sellers of practices

Based on **AVA membership data 2014**

Assume employers = owners

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30</td>
<td>6</td>
</tr>
<tr>
<td>31-40</td>
<td>115</td>
</tr>
<tr>
<td>41-50</td>
<td>193</td>
</tr>
<tr>
<td>51-60</td>
<td>221</td>
</tr>
<tr>
<td>61-70</td>
<td>98</td>
</tr>
<tr>
<td>71-80</td>
<td>7</td>
</tr>
<tr>
<td>81-90</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>641</strong></td>
</tr>
</tbody>
</table>

(McAndrew 2014)

Caveats

- unclear if vet shareholders in listed and non-listed companies “employers”?

- sell outs to corporates likely to reduce practices available

Based on **AVA membership data 2014**

Assume employers = owners
PROBLEM looming? Gender and ownership polarisation continues

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>%</th>
<th>Female % of females</th>
<th>Male</th>
<th>% of males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee</td>
<td>669</td>
<td>51%</td>
<td>490  70%</td>
<td>179</td>
<td>29%</td>
</tr>
<tr>
<td>Employer</td>
<td>641</td>
<td>49%</td>
<td>206  30%</td>
<td>435</td>
<td>71%</td>
</tr>
<tr>
<td>Total</td>
<td>1310</td>
<td>100%</td>
<td>696  100%</td>
<td>614</td>
<td>100%</td>
</tr>
</tbody>
</table>

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(McAndrew 2014)
**Different businesses have different foci (PICS)**

(Katz, 2007)

<table>
<thead>
<tr>
<th>Focus of Entrepreneurship*</th>
<th>Creation</th>
<th>Customer</th>
<th>Efficiency</th>
<th>Innovation</th>
<th>Gains $ or non$</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public</strong></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td><strong>Independent</strong> (small business)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td><strong>Corporate</strong></td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td><strong>Social</strong> (not-for-profit)</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

* Whatever type of entrepreneurship, all aim to make gains – monetary or non-monetary
**Growth-, Independence- or Social-Entrepreneurial orientation and gender**

No significant difference in mean levels of interest between males and females (n = 106)

**A reflection of overall males > females for EI, and self-confidence**

Answer to Ron’s question yesterday
Growth, Flexibility and Social entrepreneurial intent for **females** and **males** interested in own business

* P<.05 using ANOVA and Tukey HSD post hocs
## Gender and ownership
- AVA membership AVA 2014

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>21-30</td>
<td>203</td>
<td>52</td>
<td>255</td>
</tr>
<tr>
<td>Employee</td>
<td>200</td>
<td>49</td>
<td>249</td>
</tr>
<tr>
<td>Employer</td>
<td>3</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>31-40</td>
<td>200</td>
<td>113</td>
<td>313</td>
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<tr>
<td>Employee</td>
<td>146</td>
<td>52</td>
<td>198</td>
</tr>
<tr>
<td>Employer</td>
<td>54</td>
<td>61</td>
<td>115</td>
</tr>
<tr>
<td>41-50</td>
<td>153</td>
<td>139</td>
<td>292</td>
</tr>
<tr>
<td>Employee</td>
<td>80</td>
<td>19</td>
<td>99</td>
</tr>
<tr>
<td>Employer</td>
<td>73</td>
<td>120</td>
<td>193</td>
</tr>
<tr>
<td>51-60</td>
<td>120</td>
<td>191</td>
<td>311</td>
</tr>
<tr>
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<td>34</td>
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</tr>
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<td>61-70</td>
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<td>109</td>
<td>129</td>
</tr>
<tr>
<td>Employee</td>
<td>8</td>
<td>23</td>
<td>31</td>
</tr>
<tr>
<td>Employer</td>
<td>12</td>
<td>86</td>
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<td>71-80</td>
<td></td>
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<td>9</td>
</tr>
<tr>
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<td>2</td>
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<tr>
<td>Employer</td>
<td>-</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>81-90</td>
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<td></td>
<td>1</td>
</tr>
<tr>
<td>Employee</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Employer</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>696</td>
<td>614</td>
<td>1310</td>
</tr>
</tbody>
</table>

(McAndrew 2014)
Gender and career sector intent

% respondents stating positive intent

Male students n = 396  Female students n = 1412  Total students n = 1812

Sectors

* P< 0.05
University affects sector intent

% students with positive intent

For significances see paper

Sectors

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