Does the mandatory postgraduate UK surgical exam predict selection into higher speciality training?

***Duncan Scrimgeour*, J Cleland, A Lee, G Griffiths, A McKinley, C Marx and P Brennan**

Intercollegiate Research Fellow
General surgery StR, Aberdeen Royal Infirmary and University of Aberdeen

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Membership of the Royal College of Surgeons (MRCS) exam

RCS

- One of the largest postgraduate surgical exams in the world
- Designed to safeguard patients and ensure high standards
- Prerequisite for completion of **core surgical training** and entry into **higher speciality training**

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MRCS

RCS

- Part A – written papers
- Part B – OSCE
- Both can be sat from FY1 onwards

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MRCS (Part A)

RCS

Two 2-hour papers
(135 marks each)

Paper 1
Basic sciences
MCQs

Paper 2
Principles of surgery in general
SBAs

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MRCS (Part B)

RCS

18 manned stations (9-minutes each)
Total marks 360

Two broad content areas

Applied skills

Knowledge

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High-stakes examinations

- Reliable
- Valid

High-stakes examinations

- Reliable
  - reproducible

- Valid
  - how well an assessment measures what it claims to assess

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Predictive validity

RCS

"able to predict future performance in the specified domain"

(P.D Van Hove et al 2010)

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- Produces an annual report highlighting the exam's reliability

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- Responsible for continued development, quality assurance and standards of MRCS in the UK
- Produces an annual report highlighting the exam's reliability
- Yet, unlike other postgraduate UK exams (e.g. MRCP, MRCGP) there has been no analysis of the validity or predictive validity of MRCS

National selection

- Given that MRCS is a perquisite for progression to higher speciality training in the UK

- Determining the relationship between MRCS scores and outcomes in national selection is crucial

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- Determining the relationship between MRCS scores and outcomes in national selection is crucial
- One of the largest surgical specialities is general surgery

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Aim

RCS

To examine the **predictive validity** of MRCS in relation to outcomes in the general and vascular surgery national selection process

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National selection process

General and vascular surgery (ST3)

Candidates are assessed each year on eight components

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General and vascular surgery (ST3)

Candidates are assessed each year on eight components

- Academic, leadership and team working
- Communication skills and clinical skills
- Clinical management and technical skills
- Audit and portfolio

Methods

- We included all UK graduates who attempted the selection process from **2011-2015**

- **Cross-linked** selection score with MRCS database

    - Part A & B scores, number of attempts, date of graduation, date of exam
    - Self-declared socio-demographics (gender, ethnicity, DOB, first language)

Methods

- **Pearson correlation coefficients** to examine the linear relationship between each assessment

- **Multiple linear regression analysis** to identify potential independent predictors of national selection ST3 score

1458 interviewed from May 2011 to May 2015

For the general and vascular surgery national selection process

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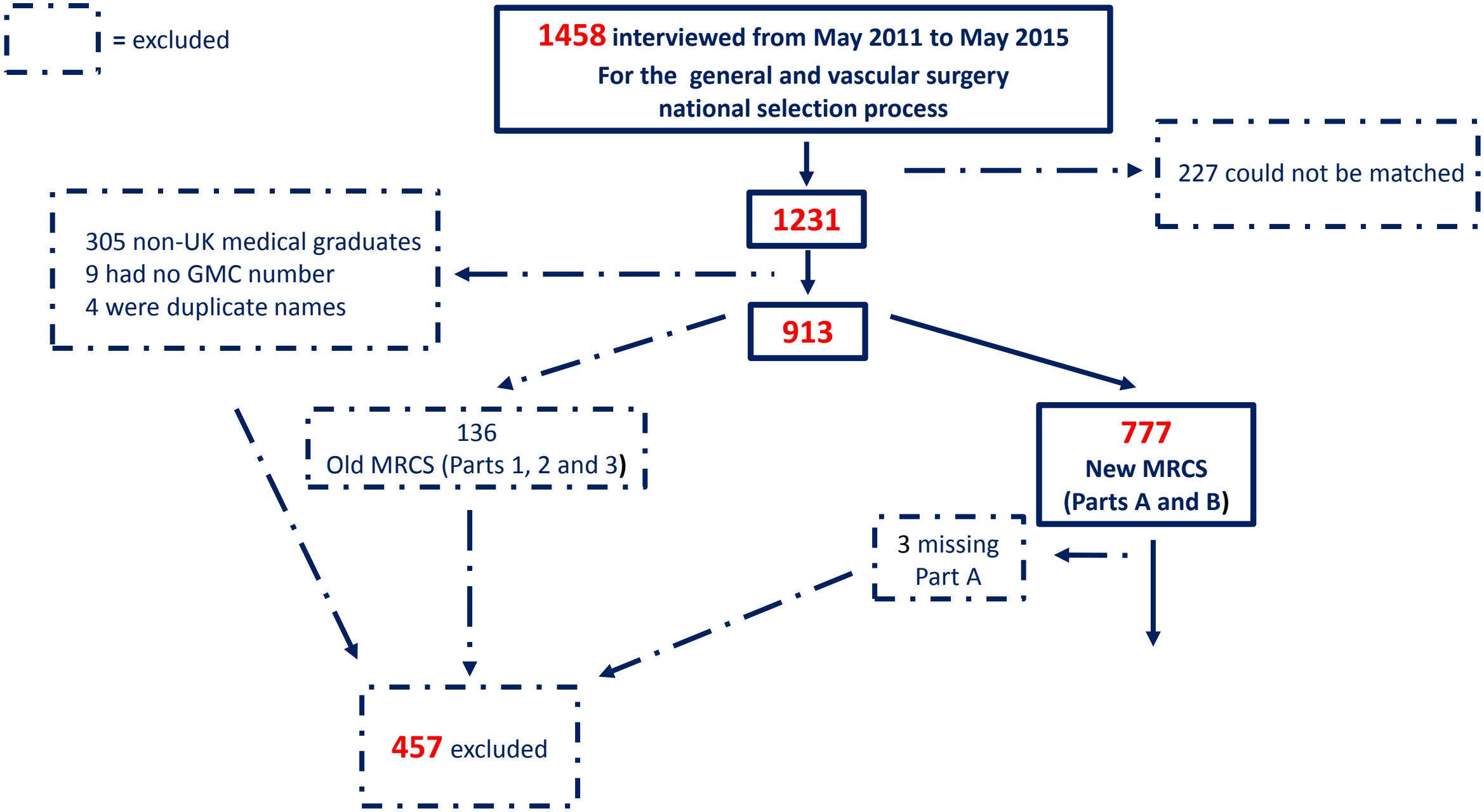
For the general and vascular surgery
national selection process
1231
227 could not be matched


= excluded
1458 interviewed from May 2011 to May 2015
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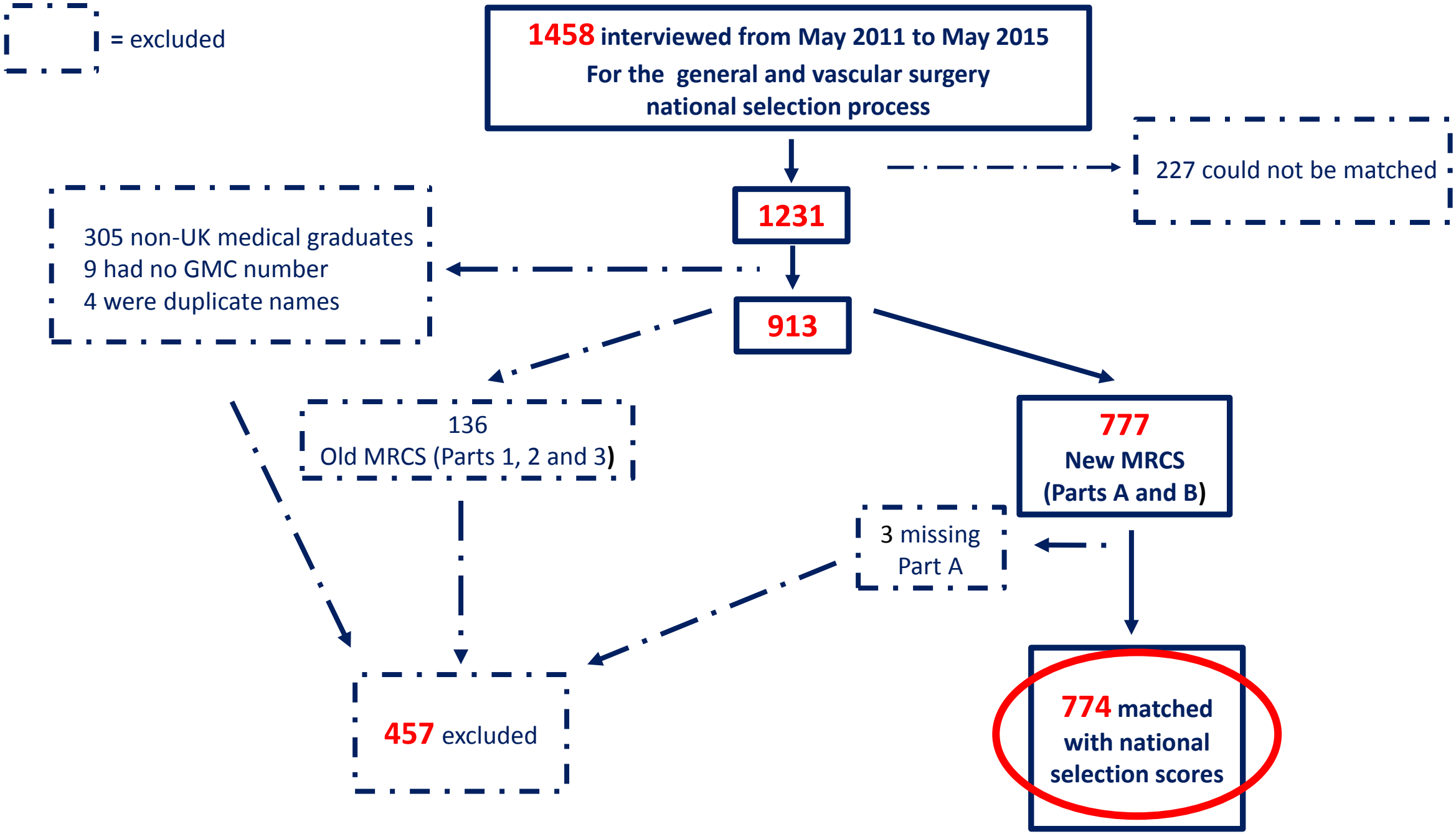
227 could not be matched
1231
305 non-UK medical graduates
9 had no GMC number
4 were duplicate names
913
136
Old MRCS (Parts 1, 2 and 3)
777
New MRCS
(Parts A and B)
3 missing
Part A
457 excluded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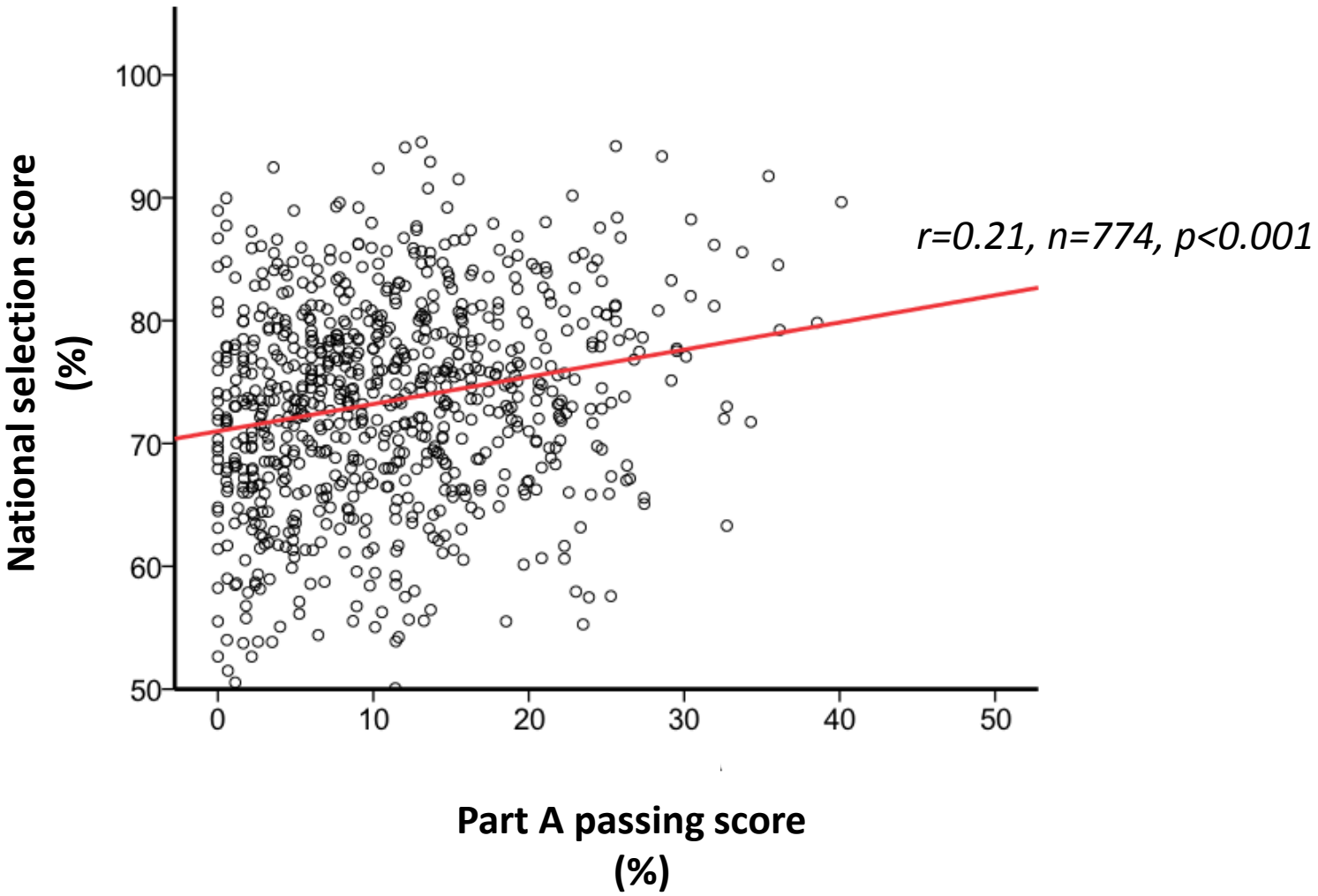
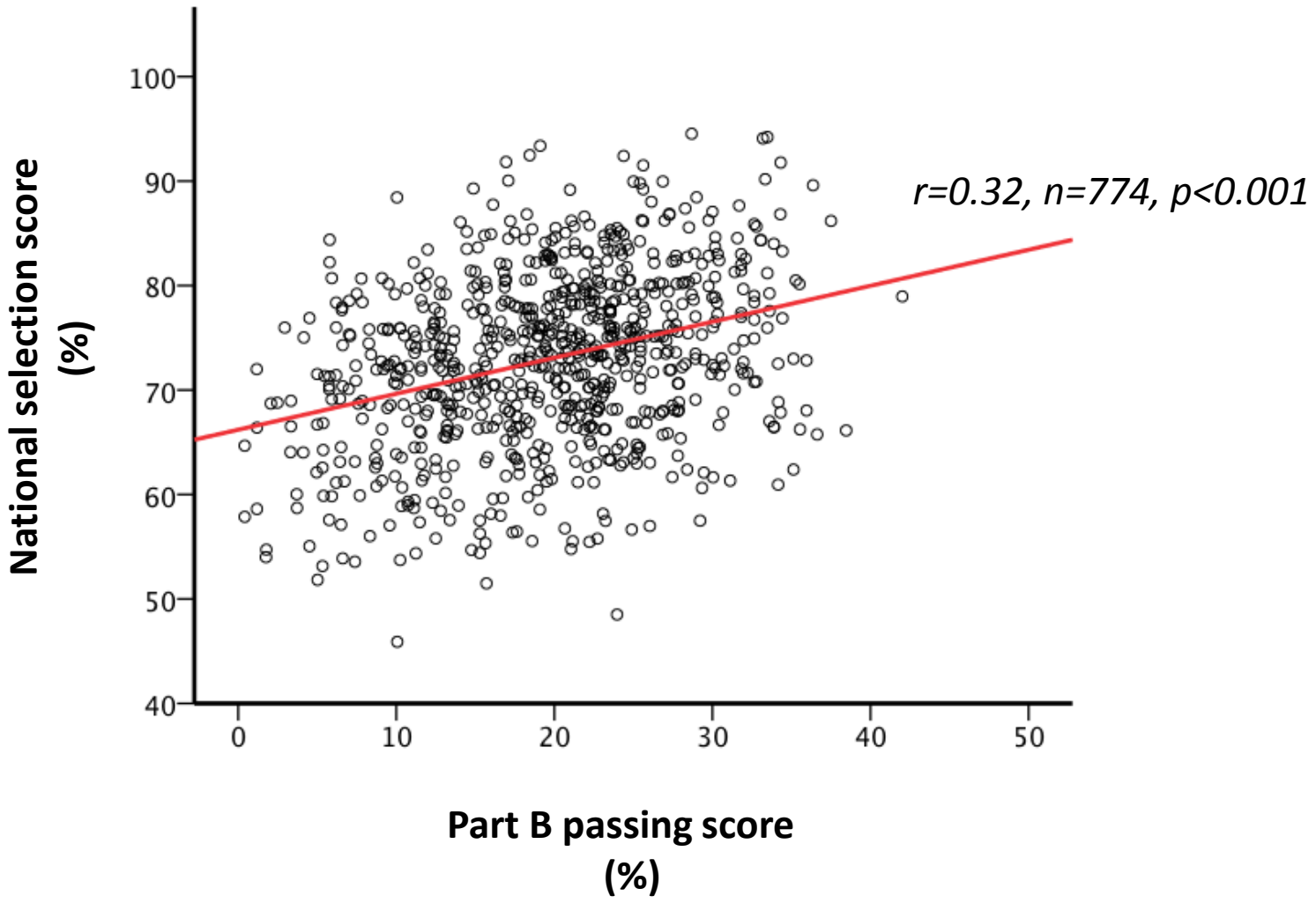
777
New MRCS
(Parts A and B)
3 missing
Part A
457 excluded
774 matched
with national
selection scores

Part A score and selection first attempt score



Part B score and selection first attempt score



Multiple linear regression analysis – ST3 score

Model R^2 =0.18, n= 598

Variable	Unstandardised Coefficients		P value
	B	Std. Error	
CONSTANT	69.67	0.97	**<0.001**
Part B MRCS - % above the pass mark			
Score	0.28	0.04	**<0.001**
Number of Part B MRCS attempts Reference - One attempt			
Two attempts	-2.93	0.79	**<0.001**
≥3 attempts	-8.11	1.31	**<0.001**
Ethnicity Reference - White British			
Asian	-1.77	0.75	**0.019**
Other	-1.30	1.02	0.201
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1%
of variance

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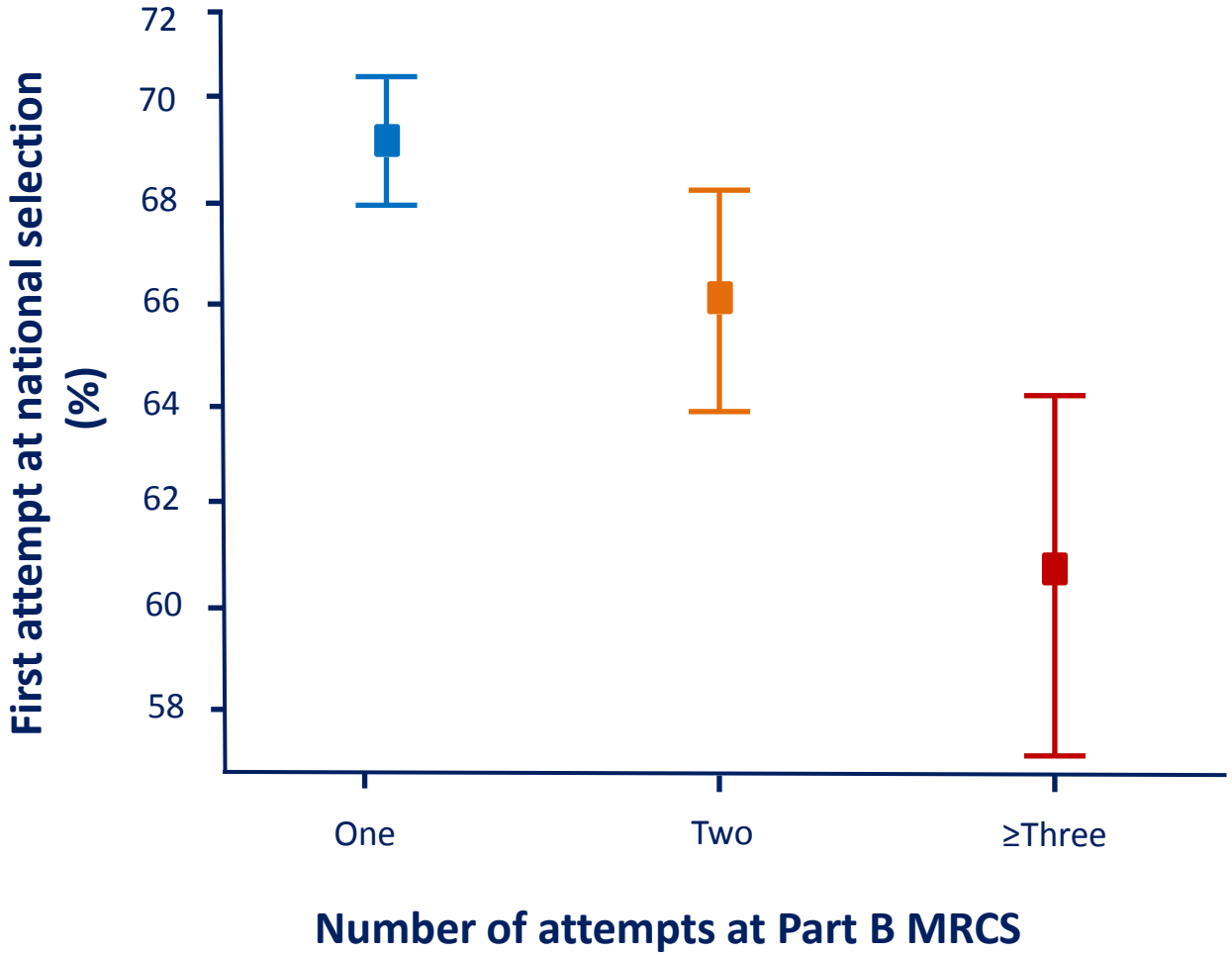
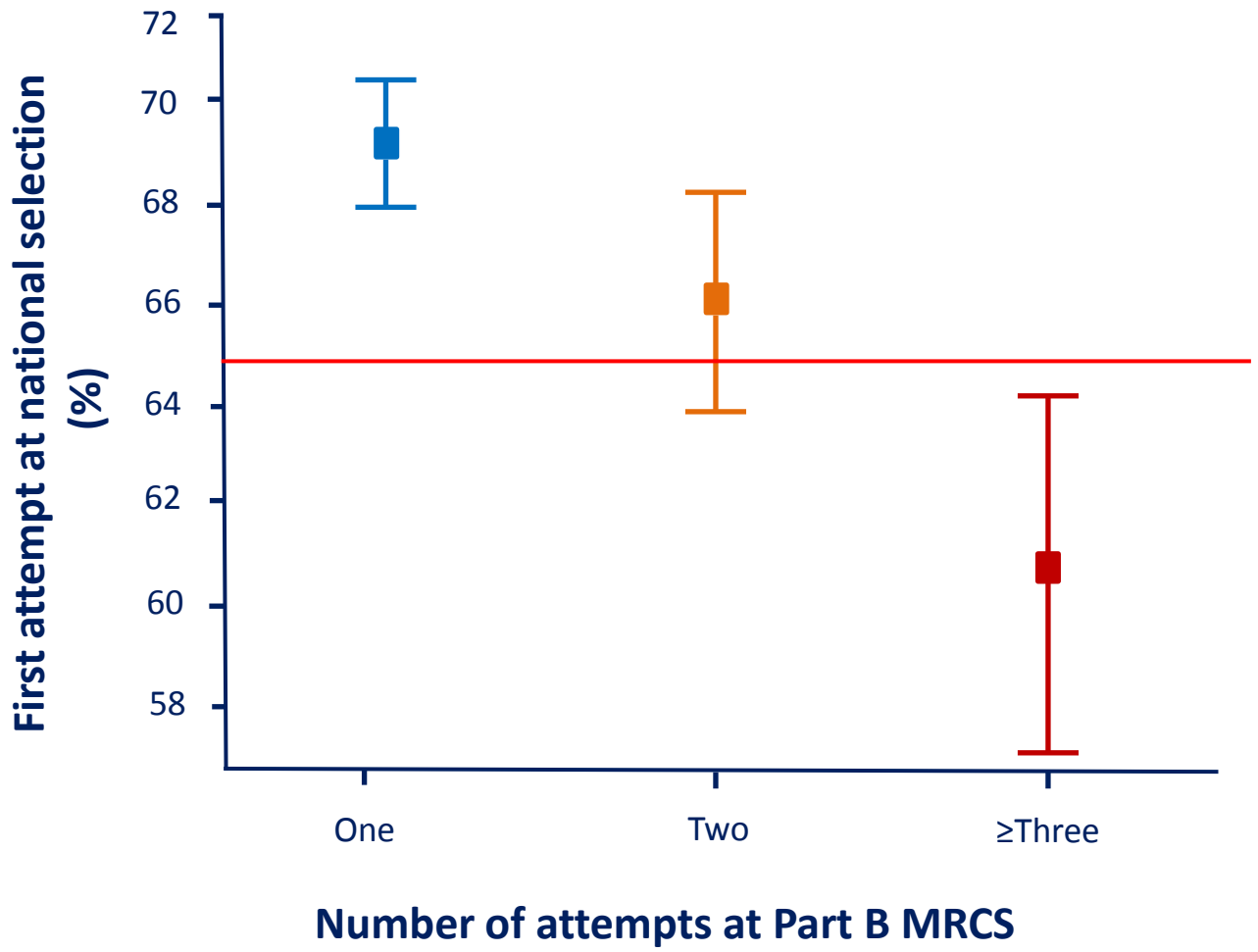
→ **10%**

→ **7%**

17%
of variance


First attempt at national selection (%)
72
70
68
66
64
62
60
58
One
Two
≥Three
Number of attempts at Part B MRCS

Previous minimal appointable scores



Conclusions

- Supports validity and predictive validity of MRCS
- 17% of variance in national selection score is explained by Part B MRCS

Conclusions

- Supports validity and predictive validity of MRCS
- 17% of variance in national selection score is explained by Part B MRCS
- Should Part B MRCS be used as one of the potential selection criteria for entering higher surgical training?

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Future work

RCS

The relationship between MRCS and…

- Performance in clinical practice e.g. ARCP outcomes
- High-stakes exit exam, FRCS

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